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APPENDIX 14
EMITTER LIBRARY CLASSIFICATION
FINAL SOFTWARE REPORT
DATA ITEM NO. A005

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INTEGRATED ELECTRONIC WARFARE SYSTEM ADVANCED DEVELOPMENT MODEL (ADM)

7500987-15
PREPARED FOR:
NAVAL AIR DEVELOPMENT CENTER
WARMINSTER, PENNSYLVANIA
CONTRACT N62269-75-C-0070

RAYTHEON
ELECTROMAGNETIC
SYSTEMS DIVISION

1 OCTOBER 1977

UNCLASSIFIED

APPENDIX 14

EMITTER LIBRARY GENERATION REQUIREMENT
FINAL SOFTWARE REPORT

DATA ITEM A005

INTEGRATED ELECTRONIC WARFARE SYSTEM (IEWS)
ADVANCED DEVELOPMENT MODEL (ADM)

Contract No. N62269-75-C-0070

Prepared for:

Naval Air Development Center
Warminster, Pennsylvania

Prepared by:

RAYTHEON COMPANY
Electromagnetic Systems Division
6380 Hollister Avenue
Goleta, California 93017

1 OCTOBER 1977

INITIAL DATA REQUIRED:

Entries in the library shall each have the following information:

1. Min. frequency, max. frequency
2. Min. PRI, max. PRI
3. Min. PW, max. PW
4. Scan Type
5. Min. scan period, max. scan period
6. ECM technique
7. Identification code or name

TRUNKS:

The emitter entries shall be combined so that all entries with the same values of 1, 2, 3 above become a single trunk. Trunks are stored in emitter library 1 (EL1).

GROUPS:

Emitter entries shall also be combined so that all entries with the same values of 4, 5, 6, 7 above become a single group. Groups are stored in emitter library 2 (EL2).

TABLES:

The following tables shall be generated to form the emitter library for IEWS:

A. EL1

1. ZLS.F
2. ODA.F
3. ODV.F
4. ZLS.PI
5. ODA.PI
6. ODV.PI
7. ZLS.PW
8. ODA.PW

```

.WKEL
.ENT      ZLS.F
.RDX      10
.RDXU     16

**      ?K = 1

**      .DU      3
**      TYPE     F

ZONE 0 0
ZEND 0

ZONE 1 2560
LIST 1 2 3 4 21 22 23 24 41 42 43 44 61 62 63 64
ZEND 1

ZONE 2 2816
ZEND 2

ZONE 3 3072
LIST 3 6 7 8 25 26 27 28
LIST 45 46 47 48 65 66 67 68
ZEND 3

ZONE 4 3328
DUPL 1
ZEND 4

ZONE 5 3584
ZEND 5

ZONE 6 3840
DUPL 3
ZEND 6

**      ?K = ?K+1
**      .ENDC

.END      ZLS.F

```

FIGURE 1. FILE QTEST.SR

B. EL2 Data

C. Library Links

1. ZLS.GT
2. ODA.GT
3. ODA.ST

DATA STRUCTURE:

EL1 data shall be structured as specified in Appendix B of reference 5. For frequency and PRI this shall consist of a list of free form zone boundaries (Figure B-2, ref. 5) with the trunk numbers present in each zone. For PW only a list of the trunk numbers in each of the fixed zones (32) need be generated. These lists shall form the input to the EL1 generation programs.

EL2 data shall consist of values for the fields of each entry as specified in reference 3. These field values shall form the input to the EL2 generation program. The entries in EL2 shall be ordered according to increasing values of the scan type code - i.e., 1, 2, 3, Within each scan type the ordering shall be according to increasing values of minimum scan period. (This is not required for the present version of level 2 search, but can save search time if the software is improved.

Since trunks are stored in EL1 and groups are stored in EL2, library linkage tables must be generated to convert from trunks to groups. The data required shall be a list of the trunks from EL1 that are contained in each group in EL2.

EL1 TABLE GENERATION:

The tables for EL1 shall be generated using MACROS written for the MACRO assembler in the PGC. The zone boundary values and the trunk lists shall be entered into a file in the format shown in Figure 1 which is an example of a file called Q TEST.SR. The parameters for the different files shall be as follows:

| OPERATOR | OPERAND | | |
|----------|-----------|---------|---------|
| | FREQUENCY | PRI | PW |
| .ENT | ZLS. F | ZLS. PI | ZLS. PW |
| .DO | 3 | 3 | 2 |
| TYPE | F | PI | PW |
| .END | ZLS. F | ZLS. PI | ZLS. PW |

For frequency, the value of the zone boundaries shall be encoded frequency which is:

$$\text{Encoded freq.} = .8 * \text{actual freq.}$$

since the LSB for frequency is 1.25 MHz.

For PW no zone boundary values need be given. Empty zones have no list. Duplicate lists shall be entered as DUPL to conserve ZLS storage.

The MACRO's will produce an assembled listing as shown in Figure 2 for QTEST.SR. A cross reference is produced by the MACRO assembly. Note that the doubled starred (**) lines are not printed out. The MACRO's generate ZLS.(), ODA.(), and ODV.() and store them in a _____ .RB file. The command (NOVA 800) to produce the RB file is:

```
MAC      filename      $LPT/L
```

These files shall be converted to AB format as explained below.

0001 .MAIN MACRO REV 02.01

17:12:46 12/14/76

```

01          .NREL
02          .ENT      ZLS.F
03          000012    .RDX      10
04          0010      .RDXU     16
05
06
07
08          ZLS.F:          ;**** KWC/BV ZONE LISIS ****
09
10          ZONE 0 0
11          ZEND 0
12
13          ZONE 1 2560
14          LIST 1 2 3 4 21 22 23 24 41 42 43 44 61 62 63 64
15          ZEND 1
16 00000'    F000      KW
17 00001'    F000      WD.0
18 00002'    0F00      WD.1
19 00003'    00F0      WD.2
20 00004'    000F      WD.3
21
22          ZONE 2 2816
23          ZEND 2
24
25          ZONE 3 3072
26          LIST 5 6 7 8 25 26 27 28
27          LIST 45 46 47 48 65 66 67 68
28          ZEND 3
29 00005'    E800      KW
30 00006'    0F00      WD.0
31 00007'    00F0      WD.1
32 00008'    000F      WD.2
33 00009'    F000      WD.4
34
35          ZONE 4 3328
36          DUPL 1
37          ZEND 4
38
39          ZONE 5 3584
40          ZEND 5
41
42          ZONE 6 3840
43          DUPL 3
44          ZEND 6
45
46
47
48          ODA.F:          ;**** OUTER-DIRECTORY ADDRESSES ****
49
50
51
52          ZONE 0 0
53          ZEND 0
54 0000A'    FFFF      EMPTY
55
56          ZONE 1 2560
57          LIST 1 2 3 4 21 22 23 24 41 42 43 44 61 62 63 64
58          ZEND 1
59 0000B'    0000      DISPL
60

```


0002 .MAIN

| | | |
|----|--------------------|--|
| 01 | | ZONE 2 2816 |
| 02 | | ZEND 2 |
| 03 | 0000C' FFFF | EMPTY |
| 04 | | |
| 05 | | ZONE 3 3072 |
| 06 | | LIST 5 6 7 8 25 26 27 28 |
| 07 | | LIST 45 46 47 48 65 66 67 68 |
| 08 | | ZEND 3 |
| 09 | 0000D' 0005 | DISPL |
| 10 | | |
| 11 | | ZONE 4 3328 |
| 12 | | DUPL 1 |
| 13 | | ZEND 4 |
| 14 | 0000E' 0000 | DISPL |
| 15 | | |
| 16 | | ZONE 5 3584 |
| 17 | | ZEND 5 |
| 18 | 0000F' FFFF | EMPTY |
| 19 | | |
| 20 | | ZONE 6 3840 |
| 21 | | DUPL 3 |
| 22 | | ZEND 6 |
| 23 | 00010' 0005 | DISPL |
| 24 | | |
| 25 | | |
| 26 | | |
| 27 | | |
| 28 | 00011' 0007 DDV.F: | ZCI ;**** OUTER-DIRECTORY VALUES **** |
| 29 | | |
| 30 | | |
| 31 | | ZONE 0 0 |
| 32 | 00012' 0000 | 0 |
| 33 | | ZEND 0 |
| 34 | | |
| 35 | | ZONE 1 2560 |
| 36 | 00013' 0A00 | 2560 |
| 37 | | LIST 1 2 3 4 21 22 23 24 41 42 43 44 61 62 63 64 |
| 38 | | ZEND 1 |
| 39 | | |
| 40 | | ZONE 2 2816 |
| 41 | 00014' 0B00 | 2816 |
| 42 | | ZEND 2 |
| 43 | | |
| 44 | | ZONE 3 3072 |
| 45 | 00015' 0C00 | 3072 |
| 46 | | LIST 5 6 7 8 25 26 27 28 |
| 47 | | LIST 45 46 47 48 65 66 67 68 |
| 48 | | ZEND 3 |
| 49 | | |
| 50 | | ZONE 4 3328 |
| 51 | 00016' 0D00 | 3328 |
| 52 | | DUPL 1 |
| 53 | | ZEND 4 |
| 54 | | |
| 55 | | ZONE 5 3584 |
| 56 | 00017' 0E00 | 3584 |
| 57 | | ZEND 5 |
| 58 | | |
| 59 | | ZONE 6 3840 |
| 60 | 00018' 0F00 | 3840 |

FIGURE 2 b.

0005 .MAIN

01

DUPL 3

02

ZEND 6

03

04

05

.END ZLS.F

FIGURE 2C.

| | | | | | | | | | |
|-------|--------|----|------|------|------|------|------|------|------|
| BASE | 000000 | | 1/09 | 1/12 | 1/21 | 1/24 | 1/34 | 1/37 | 1/38 |
| | | | 1/41 | 1/44 | 1/45 | 1/47 | 1/55 | 1/59 | 1/60 |
| | | | 2/04 | 2/09 | 2/10 | 2/13 | 2/14 | 2/15 | 2/19 |
| | | | 2/22 | 2/23 | 2/24 | 2/26 | 2/34 | 2/39 | 2/43 |
| | | | 2/49 | 2/53 | 2/54 | 2/58 | 3/02 | 3/03 | |
| BIT | 001000 | | 1/15 | 1/27 | 1/28 | 1/58 | 2/07 | 2/08 | 2/36 |
| | | | 2/47 | 2/48 | | | | | |
| CLEAR | 000007 | MC | 1/09 | 1/47 | 2/26 | | | | |
| DISPL | 000005 | | 1/12 | 1/21 | 1/24 | 1/34 | 1/37 | 1/38 | 1/41 |
| | | | 1/44 | 1/45 | 1/55 | 1/59 | 1/60 | 2/04 | 2/09 |
| | | | 2/10 | 2/13 | 2/14 | 2/15 | 2/19 | 2/22 | 2/23 |
| | | | 2/24 | 2/34 | 2/39 | 2/43 | 2/49 | 2/53 | 2/54 |
| | | | 2/58 | 3/02 | 3/03 | | | | |
| DUPL | 00018F | MC | 1/36 | 1/43 | 2/12 | 2/21 | 2/52 | 3/01 | |
| EMPTY | 00FFFF | | 1/09 | 1/12 | 1/21 | 1/24 | 1/34 | 1/38 | 1/41 |
| | | | 1/45 | 1/51 | 1/54 | 1/59 | 2/03 | 2/09 | 2/14 |
| | | | 2/18 | 2/23 | 2/30 | 2/34 | 2/39 | 2/43 | 2/49 |
| | | | 2/54 | 2/58 | 3/03 | | | | |
| | | | | | | | | | |
| FL001 | 000000 | | 1/11 | 1/12 | 1/53 | 1/54 | 1/55 | 2/32 | 2/34 |
| FL002 | 000001 | | 1/14 | 1/16 | 1/21 | 1/57 | 1/59 | 1/60 | 2/36 |
| | | | 2/39 | | | | | | |
| FL003 | 000000 | | 1/23 | 1/24 | 2/02 | 2/03 | 2/04 | 2/41 | 2/43 |
| FL004 | 000001 | | 1/26 | 1/29 | 1/34 | 2/06 | 2/09 | 2/10 | 2/45 |
| | | | 2/49 | | | | | | |
| FL005 | 000002 | | 1/36 | 1/37 | 1/38 | 2/12 | 2/13 | 2/14 | 2/15 |
| | | | 2/51 | 2/53 | 2/54 | | | | |
| FL006 | 000000 | | 1/40 | 1/41 | 2/17 | 2/18 | 2/19 | 2/56 | 2/56 |
| FL007 | 000002 | | 1/43 | 1/44 | 1/45 | 2/21 | 2/22 | 2/23 | 2/24 |
| | | | 2/60 | 3/02 | 3/03 | | | | |
| | | | | | | | | | |
| KW | 000000 | | 1/09 | 1/12 | 1/15 | 1/16 | 1/17 | 1/24 | 1/27 |
| | | | 1/28 | 1/29 | 1/30 | 1/38 | 1/41 | 1/45 | 1/47 |
| | | | 1/54 | 1/58 | 1/59 | 2/03 | 2/07 | 2/08 | 2/09 |
| | | | 2/14 | 2/18 | 2/23 | 2/26 | 2/34 | 2/38 | 2/39 |
| | | | 2/43 | 2/47 | 2/48 | 2/49 | 2/54 | 2/58 | 3/03 |
| LIST | 0001A1 | MC | 1/14 | 1/26 | 1/27 | 1/57 | 2/06 | 2/07 | 2/37 |
| | | | 2/46 | 2/47 | | | | | |
| NOT.0 | 0001CC | MC | 1/12 | 1/16 | 1/24 | 1/29 | 1/38 | 1/41 | 1/45 |
| | | | 1/54 | 1/59 | 2/03 | 2/09 | 2/14 | 2/18 | 2/23 |
| | | | 2/34 | 2/39 | 2/43 | 2/49 | 2/54 | 2/58 | 3/03 |
| ODA.F | 00000A | | 1/09 | 1/48 | 2/27 | | | | |
| ODV.F | 000011 | | 1/09 | 1/50 | 2/28 | | | | |
| SE1 | 000184 | MC | 1/15 | 1/27 | 1/28 | 1/58 | 2/07 | 2/08 | 2/38 |
| | | | 2/47 | 2/48 | | | | | |
| TRUNK | 000043 | | 1/15 | 1/27 | 1/28 | 1/58 | 2/07 | 2/08 | 2/38 |
| | | | 2/47 | 2/48 | | | | | |
| TYPE | 00016F | MC | 1/07 | 1/46 | 2/25 | | | | |
| WD.0 | 000000 | | 1/09 | 1/15 | 1/17 | 1/18 | 1/27 | 1/28 | 1/30 |
| | | | 1/31 | | | | | | |
| WD.1 | 000000 | | 1/09 | 1/15 | 1/18 | 1/19 | 1/27 | 1/28 | 1/31 |
| | | | 1/32 | | | | | | |
| WD.2 | 000000 | | 1/09 | 1/15 | 1/19 | 1/20 | 1/27 | 1/28 | 1/32 |
| | | | 1/33 | | | | | | |
| WD.3 | 000000 | | 1/09 | 1/15 | 1/20 | 1/21 | 1/27 | 1/28 | 1/33 |
| WD.4 | 000000 | | 1/09 | 1/15 | 1/21 | 1/27 | 1/28 | 1/33 | 1/34 |
| WD.5 | 000000 | | 1/09 | 1/15 | 1/21 | 1/27 | 1/28 | 1/34 | |
| WD.6 | 000000 | | 1/09 | 1/15 | 1/21 | 1/27 | 1/28 | 1/34 | |
| WD.7 | 000000 | | 1/09 | 1/15 | 1/21 | 1/27 | 1/28 | 1/34 | |
| WD.8 | 000000 | | 1/09 | 1/15 | 1/21 | 1/27 | 1/28 | 1/34 | |
| WD.9 | 000000 | | 1/09 | 1/15 | 1/21 | 1/27 | 1/28 | 1/34 | |

0005 .MAIN

| | | | | | | | | |
|-------|-----------|------|------|------|------|------|------|------|
| WORD | 000004 | 1/15 | 1/27 | 1/28 | 1/58 | 2/07 | 2/08 | 2/38 |
| | | 2/47 | 2/48 | | | | | |
| ZCT | 000007 | 1/09 | 1/11 | 1/12 | 1/14 | 1/16 | 1/21 | 1/23 |
| | | 1/24 | 1/26 | 1/29 | 1/34 | 1/36 | 1/37 | 1/38 |
| | | 1/40 | 1/41 | 1/43 | 1/44 | 1/45 | 1/50 | 1/51 |
| | | 1/53 | 1/54 | 1/55 | 1/57 | 1/59 | 1/60 | 2/02 |
| | | 2/03 | 2/04 | 2/06 | 2/09 | 2/10 | 2/12 | 2/13 |
| | | 2/14 | 2/15 | 2/17 | 2/18 | 2/19 | 2/21 | 2/22 |
| | | 2/23 | 2/24 | 2/28 | 2/30 | 2/32 | 2/34 | 2/36 |
| | | 2/39 | 2/41 | 2/43 | 2/45 | 2/49 | 2/51 | 2/53 |
| | | 2/54 | 2/56 | 2/58 | 2/60 | 3/02 | 3/03 | |
| ZEND | 000100 MC | 1/11 | 1/15 | 1/23 | 1/28 | 1/37 | 1/40 | 1/44 |
| | | 1/53 | 1/58 | 2/02 | 2/08 | 2/13 | 2/17 | 2/22 |
| | | 2/33 | 2/38 | 2/42 | 2/48 | 2/53 | 2/57 | 3/02 |
| ZLS.F | 000000 EN | 1/02 | 1/08 | 1/47 | 2/26 | 3/05 | | |
| ZN.0 | 000000 | 1/11 | 1/12 | 1/53 | 1/55 | 2/32 | 2/34 | |
| ZN.1 | 000000 | 1/14 | 1/21 | 1/37 | 1/57 | 1/59 | 1/60 | 2/13 |
| | | 2/36 | 2/39 | 2/53 | | | | |
| ZN.2 | 000005 | 1/23 | 1/24 | 2/02 | 2/04 | 2/41 | 2/43 | |
| ZN.3 | 000005 | 1/26 | 1/34 | 1/44 | 2/06 | 2/09 | 2/10 | 2/22 |
| | | 2/45 | 2/49 | 3/02 | | | | |
| ZN.4 | 00000A | 1/36 | 1/38 | 2/12 | 2/14 | 2/15 | 2/51 | 2/54 |
| ZN.5 | 00000A | 1/40 | 1/41 | 2/17 | 2/19 | 2/56 | 2/58 | |
| ZN.6 | 00000A | 1/43 | 1/45 | 2/21 | 2/23 | 2/24 | 2/60 | 3/03 |
| ZONE | 000194 MC | 1/10 | 1/13 | 1/22 | 1/25 | 1/35 | 1/39 | 1/42 |
| | | 1/52 | 1/56 | 2/01 | 2/05 | 2/11 | 2/16 | 2/20 |
| | | 2/31 | 2/35 | 2/40 | 2/44 | 2/50 | 2/55 | 2/59 |
| ?I | 000001 | 1/09 | 1/15 | 1/17 | 1/18 | 1/19 | 1/20 | 1/21 |
| | | 1/27 | 1/28 | 1/30 | 1/31 | 1/32 | 1/33 | 1/34 |
| | | 1/58 | 2/07 | 2/08 | 2/38 | 2/47 | 2/48 | |
| ?J | 00000B | 1/15 | 1/27 | 1/28 | | | | |
| ?K | 000004 | 1/06 | 1/08 | 1/09 | 1/11 | 1/12 | 1/14 | 1/15 |
| | | 1/16 | 1/21 | 1/23 | 1/24 | 1/26 | 1/27 | 1/28 |
| | | 1/29 | 1/34 | 1/36 | 1/37 | 1/38 | 1/40 | 1/41 |
| | | 1/43 | 1/44 | 1/45 | 1/46 | 1/47 | 1/48 | 1/50 |
| | | 1/53 | 1/54 | 1/55 | 1/57 | 1/58 | 1/59 | 1/60 |
| | | 2/02 | 2/03 | 2/04 | 2/06 | 2/07 | 2/08 | 2/09 |
| | | 2/10 | 2/12 | 2/13 | 2/14 | 2/15 | 2/17 | 2/18 |
| | | 2/19 | 2/21 | 2/22 | 2/23 | 2/24 | 2/25 | 2/26 |
| | | 2/27 | 2/28 | 2/32 | 2/34 | 2/36 | 2/38 | 2/39 |
| | | 2/41 | 2/43 | 2/45 | 2/47 | 2/48 | 2/49 | 2/51 |
| | | 2/53 | 2/54 | 2/56 | 2/58 | 2/60 | 3/02 | 3/03 |
| | | 3/04 | | | | | | |

FIGURE 2 R.

EL2 DATA GENERATION:

The data for EL2 shall be entered into a file using the MARO's as shown in Figure 3 for a single EL2 entry. The sequence from EL2 to E2END shall be repeated for each entry in EL2. The .RDX for this input shall always be 10 (decimal). Only non-zero words need be entered. The arguments represent the values of defined fields in each word. The MACRO's will check to ensure that the correct number of arguments are input for that word.

The MACRO's will produce an assembled listing as shown in Figure 4 and a _____.RB file. The command (NOVA 800) to produce the RF file is:

```
MAC      filename      $LPT/L
```

The RB file shall be converted to AB format as explained below.

```

      .INREL
      .END      EL21
      .RDX      10
      .RDX0     10

EL21:  EL2
      E2WD 0   1 0
      E2WD 1   5 11
      E2WD 2   0 0 0 1
      E2WD 3   1 1023
      E2WD 5   6 0 35
      E2WD 6   2 0 0
      E2END

      .END      EL21

```

FIGURE 3. EXAMPLE OF FILE FOR EL2 DATA

```
01      .NRRL
02      .ENT      EL21
03      000012    .RDX      10
04      0010      .RDX0     16
05
06      EL21:     EL2
07      E2WD 0    1 0
08      E2WD 1    5 11
09      ;***** ERROR: TOO FEW ARGUMENTS FOR WORD 1 *****
10      E2WD 2    0 0 0 1
11      E2WD 3    1 1023
12      E2WD 5    6 0 35
13      E2WD 6    2 0 0
14      E2END
15 00000' 1000    WD.0
16 00002' 0001    WD.2
17 00003' 15FF    WD.3
18 00005' 6023    WD.5
19 00006' 2000    WD.6
20
21      .END      EL21
```

FIGURE 4. ASSEMBLY LISTING FOR EL2 DATA

LIBRARY LINKS:

The ZLS.GT and ODA.GT files shall be generated in a manner similar to that for ZLS.PW and ODA.PW. An example of a file created for this purpose is given in Figure 5. Note that the end of the DO loop has a value of 4 for ?K.

The MARCO's will produce an assembled listing as shown in Figure 6 and a _____ .RB file. The command (NOVA 800) to produce the RB file is:

MAC filename \$LPT/L

The RB file shall be converted to AB format as explained below.

The ODA.ST table contains the emitter library number (ELN) of the first entry of each scan type (Reference 2). There is provision for 16 different scan types although only 1 - 4 are presently implemented. The entry for scan type zero is don't care. An example of ODA.ST is as follows:

| | |
|----|------|
| 0 | XXXX |
| 1 | 1 |
| 2 | 16 |
| 3 | 25 |
| 4 | 36 |
| 5 | 51 |
| ⋮ | ⋮ |
| 15 | 51 |

CONVERSION TO AB FORMAT:

The conversion from relocatable binary (RB) format to absolute binary (AB) format that can be loaded with the operational code is done as follows:

1. Revise EL1.MS to pick the correct values for NFRQ and NPRI and to reserve enough space for ZLS.(), ODA.(),


```

.NREL
.ENT    ZLS.GI
.RDX    10
.RDXD   16

**      ?K = 1

**      .DU    2
**      TYPE   GI

ZONE 1
LIST 27
ZEND 1

ZONE 2
LIST 26
ZEND 2

ZONE 3
LIST 1
ZEND 3

ZONE 4
DUPL 2
ZEND 4

ZONE 5
LIST 28 29 30
ZEND 5

ZONE 6
LIST 4 5
ZEND 6

ZONE 7
LIST 29
ZEND 7

ZONE 8
LIST 1 2 3
ZEND 8

ZONE 9
LIST 5
ZEND 9

**      ?K = 4
**      .ENDC

.END    ZLS.GI

```

FIGURE 5. EXAMPLE OF FILE FOR LIBRARY LINKS

```

01 .NREL
02 .ENT ZLS.GT
03 000012 .RDX 10
04 0010 .RDXO 16
05
06
07
08 ZLS.GT: ;**** KWC/BV ZONE LISTS ****
09
10 ZONE 1
11 LIST 27
12 ZEND 1
13 00000' 4000 KW
14 00001' 0020 WD.1
15
16 ZONE 2
17 LIST 26
18 ZEND 2
19 00002' 4000 KW
20 00003' 0040 WD.1
21
22 ZONE 3
23 LIST 1
24 ZEND 3
25 00004' 8000 KW
26 00005' 8000 WD.0
27
28 ZONE 4
29 DUPL 2
30 ZEND 4
31
32 ZONE 5
33 LIST 28 29 30
34 ZEND 5
35 00006' 4000 KW
36 00007' 0010 WD.1
37
38 ZONE 6
39 LIST 4 5
40 ZEND 6
41 00008' 8000 KW
42 00009' 1800 WD.0
43
44 ZONE 7
45 LIST 29
46 ZEND 7
47 0000A' 4000 KW
48 0000B' 0008 WD.1
49
50 ZONE 8
51 LIST 1 2 3
52 ZEND 8
53 0000C' 8000 KW
54 0000D' 8000 WD.0
55
56 ZONE 9
57 LIST 5
58 ZEND 9
59 0000E' 8000 KW
60 0000F' 0000 WD.0

```

```

0002 .MAIN
01
02
03
04
05
06 00010' 0009 ODA.GI: ZCI ;**** OUTER-DIRECTORY ADDRESSES ****
07
08
09 ZONE 1
10 LIST 27
11 ZEND 1
12 00011' 0000 DISPL
13
14 ZONE 2
15 LIST 26
16 ZEND 2
17 00012' 0004 DISPL
18
19 ZONE 3
20 LIST 1
21 ZEND 3
22 00013' 0008 DISPL
23
24 ZONE 4
25 DUPL 2
26 ZEND 4
27 00014' FFFA DISPL
28
29 ZONE 5
30 LIST 28 29 30
31 ZEND 5
32 00015' 0000 DISPL
33
34 ZONE 6
35 LIST 4 5
36 ZEND 6
37 00016' 0010 DISPL
38
39 ZONE 7
40 LIST 29
41 ZEND 7
42 00017' 0014 DISPL
43
44 ZONE 8
45 LIST 1 2 3
46 ZEND 8
47 00018' 0018 DISPL
48
49 ZONE 9
50 LIST 5
51 ZEND 9
52 00019' 0010 DISPL
53
54
55 .END ZLS.GI

```

FIGURE 6b.

and ODV.() for frequency and PRI. For PW, the length of ZLS.PW shall be reserved, but ODA.PW shall always be 32 locations.

2. Revise LIBLINK.MS to pick the correct value for NGRP and to reserve enough space for ZLS.GT.
3. In both 1. and 2. the order of the tables shall be ZLS, ODA, and ODV (if required). EL1.MS and LIBLINK.MS shall be revised to accommodate this ordering if not already done.
4. Make sure that enough space is reserved for EL2 data.
5. The program shall be reassembled to determine the starting and ending locations for each file. The NOVA 800 command for assembly is:

META/X RP16/S filename,...filename \$LPT/L

6. From step 5 find the address of the first location for a file - e.g., ZLS.F - and the address of the last address for a file - e.g., last address of ODV.F. This shall be done for each separate file created. (Contiguous files may be combined into a single file). Express the first addr FADDR₁₆ and the last address LADDR₁₆ in octal as faddr and laddr respectively.
7. Create a save file _____. SV for each RB file by using the following NOVA 800 command:

RLDR/Z faddr/N filename X/L;MAP/D X

8. Create an absolute binary file _____.AB for each SV file by using the following NOVA 800 command:

MKABS/Z faddr/F laddr/T filename.SV filename.AB

9. To obtain a hexadecimal listing of the AB file use the following NOVA 800 command:

BLOOK/H filename.AB

10. The program and the new library data shall be loaded via serial line or paper tape. If AB format is acceptable, a paper tape in AB format may be obtained by using the NOVA 2 command:

BPUNCH filename.AB

If BQ format is required, then a conversion through MATS must be done before loading the RP-16.

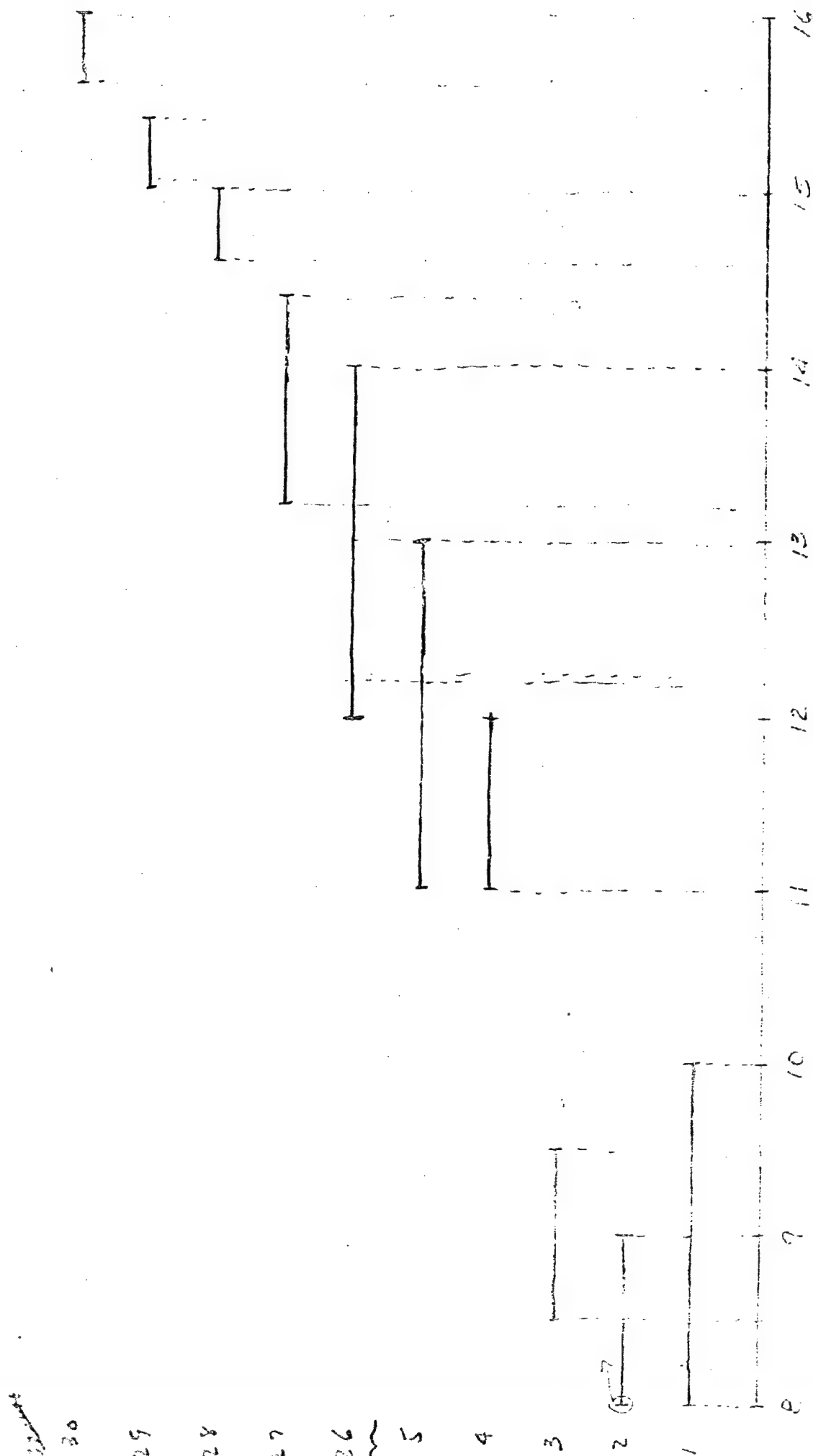
LIBRARY EXAMPLE:

A complete library example from initial data through the creation of AB format data is attached. The initial data contains 14 different emitter/modes - i.e., 14 unique combinations of frequency, PRI, PW, and scan period ranges, scan type, ECM technique, and identification code. The initial data listings are shown in Figure 7 ordered according to increasing value of minimum frequency. Of the 14 entries there are 10 distinct trunks which have been arbitrarily given trunk numbers 1-5 and 26-30 (to obtain words 1 and/or 2 in the ZLS table). The EL2 classification on scan type min. and max. scan period, ECM technique, and identification yields 9 groups which are ordered by increasing scan code 1 = circular, 2 = sector, 3 = conscan, and 4 = steady.

The resulting EL2 data entries have min scan = \emptyset and max scan = 3FF because there is no scan period measurement in the IEWS, ADM, Priority 1 code. If scan period is incorporated at some time in the future, then the min and max scan values would correspond to those given in Figure 7.

| ID | Min. Freq. | Max. Freq. | Min. Pri | Max. Pri | Min. PW | Max. PW | Scan Type | Min. Scan Prd. | Max. Scan Prd. | ECM Tech |
|-------|------------|------------|----------|----------|---------|---------|-----------|----------------|----------------|----------|
| 101 | 8000 | 9000 | 1000 | 1040 | .9 | 1.05 | STDY | 0.0 | 0.0 | 2 |
| 635 A | 8000 | 10012 | 895 | 1103 | 1.0 | 1.1 | STDY | 0.0 | 0.0 | 2 |
| 635 B | 8000 | 10012 | 895 | 1103 | 1.0 | 1.1 | SECT | .016 | .032 | 126 |
| 225 | 8500 | 9500 | 800 | 1200 | .8 | 1.05 | STDY | 0.0 | 0.0 | 2 |
| 416 | 11000 | 12000 | 560 | 840 | .5 | .7 | CONS | .02 | .04 | 71 |
| 153 A | 11000 | 13000 | 1160 | 1240 | .625 | .7 | STDY | 0.0 | 0.0 | 12 |
| 153 B | 11000 | 13000 | 1160 | 1240 | .625 | .7 | CONS | .02 | .04 | 71 |
| 196 A | 12000 | 14000 | 1040 | 1080 | .65 | .775 | SECT | .025 | .050 | 117 |
| 196 B | 12000 | 14000 | 1040 | 1080 | .65 | .775 | CIRC | 2.0 | 4.0 | 82 |
| 302 | 13207 | 14400 | 840 | 1200 | .4 | .675 | CIRC | 0.5 | 1.5 | 35 |
| 118 | 14600 | 15103 | 1600 | 1800 | .2 | .3 | SECT | .064 | .075 | 166 |
| 253 A | 15103 | 15400 | 440 | 600 | .2 | .4 | CONS | .03 | .05 | 50 |
| 253 B | 15103 | 15400 | 440 | 600 | .2 | .4 | SECT | .064 | .075 | 166 |
| 512 | 15600 | 16000 | 521 | 760 | .3 | .4 | SECT | .064 | .075 | 166 |

Figure 7. Example of Initial Library Data



FREQUENCY, GHz

ODV.F

2LS.F

| | ODV.F | | ↓ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 2LS.F |
|----|-------|--------|----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|------------|
| 1 | 70800 | EMPTY | -1 | 1 | | | | | | | | | | | | | | | | 0 8 0 0 0 |
| 2 | 80000 | 1,2 | 0 | 1 | 1 | | | | | | | | | | | | | | | C 0 0 0 |
| 3 | 80000 | 1,2,3 | 2 | 1 | | | | | | | | | | | | | | | | 2 8 0 0 0 |
| 4 | 90000 | 1,3 | 4 | 1 | 1 | 1 | | | | | | | | | | | | | | E 0 0 0 |
| 5 | 90000 | 1 | 6 | 1 | | | | | | | | | | | | | | | | 4 8 0 0 0 |
| 6 | 10000 | EMPTY | -1 | 1 | | 1 | | | | | | | | | | | | | | A 0 0 0 |
| 7 | 11000 | 4,5 | 8 | 1 | | | | | | | | | | | | | | | | 6 8 0 0 0 |
| 8 | 12000 | 4,5,26 | 10 | 1 | | | | | | | | | | | | | | | | 8 0 0 0 |
| 9 | 96001 | 5,26 | 13 | 1 | | | | | | | | | | | | | | | | 8 8 0 0 0 |
| 10 | 13000 | 26 | 16 | | | 1 | 1 | | | | | | | | | | | | | 1 8 0 0 |
| 11 | 13000 | 26,27 | 18 | 1 | 1 | | | | | | | | | | | | | | | 10 0 0 0 |
| 12 | 14000 | 27 | 20 | | | 1 | 1 | | | | | | | | | | | | | 1 8 0 0 |
| 13 | 14000 | EMPTY | -1 | | | | | | | | | 1 | | | | | | | | 0 0 4 0 |
| 14 | 14000 | 28 | 22 | 1 | 1 | | | | | | | | | | | | | | | 13 0 0 0 |
| 15 | 15000 | 28,29 | 24 | | | | | 1 | | | | | | | | | | | | 0 8 0 0 |
| 16 | 15000 | 29 | 26 | | | | | | | | | 1 | | | | | | | | 0 0 4 0 |
| 17 | 15000 | EMPTY | -1 | | 1 | | | | | | | | | | | | | | | 16 4 0 0 0 |
| 18 | 15000 | 30 | 28 | | | | | | | | | 1 | | | | | | | | 0 0 4 0 |
| 19 | 16000 | EMPTY | -1 | | 1 | | | | | | | | | | | | | | | 18 4 0 0 0 |
| | | | | | | | | | | | | 1 | 1 | | | | | | | 0 0 6 0 |
| | | | | 1 | | | | | | | | | | | | | | | | 20 4 0 0 0 |
| | | | | | | | | | | | | | | 1 | | | | | | 0 0 2 0 |
| | | | | 1 | | | | | | | | | | | | | | | | 22 4 0 0 0 |
| | | | | | | | | | | | | | | | 1 | | | | | 0 0 1 0 |
| | | | | 1 | | | | | | | | | | | | | | | | 24 4 0 0 0 |
| | | | | | | | | | | | | | | | 1 | 1 | | | | 0 0 1 8 |
| | | | | 1 | | | | | | | | | | | | | | | | 26 4 0 0 0 |
| | | | | | | | | | | | | | | | | 1 | | | | 0 0 0 8 |
| | | | | 1 | | | | | | | | | | | | | | | | 28 4 0 0 0 |
| | | | | | | | | | | | | | | | | | 1 | | | 0 0 0 4 |

N.F = 19

Encoded freq =

0.8 * Actual freq

| | | | | |
|----|--------|--------|--------------|-------------------------------|
| 01 | | | .NREL | |
| 02 | | | .ENI | ZLS.F |
| 03 | 000012 | | .RDX | 10 |
| 04 | 0010 | | .RDXU | 16 |
| 05 | | | | |
| 06 | | | | |
| 07 | | ZLS.F: | | ;**** KWC/BV ZONE LISTIS **** |
| 08 | | | | |
| 09 | | | ZONE 0 0 | |
| 10 | | | ZEND 0 | |
| 11 | | | | |
| 12 | | | ZONE 1 6400 | |
| 13 | | | LIST 1 2 | |
| 14 | | | ZEND 1 | |
| 15 | 000001 | 8000 | KW | |
| 16 | 000011 | 0000 | WD.0 | |
| 17 | | | | |
| 18 | | | ZONE 2 6800 | |
| 19 | | | LIST 1 2 3 | |
| 20 | | | ZEND 2 | |
| 21 | 000002 | 8000 | KW | |
| 22 | 000003 | 0000 | WD.0 | |
| 23 | | | | |
| 24 | | | ZONE 3 7200 | |
| 25 | | | LIST 1 3 | |
| 26 | | | ZEND 3 | |
| 27 | 000004 | 8000 | KW | |
| 28 | 000005 | 0000 | WD.0 | |
| 29 | | | | |
| 30 | | | ZONE 4 7600 | |
| 31 | | | LIST 1 | |
| 32 | | | ZEND 4 | |
| 33 | 000006 | 8000 | KW | |
| 34 | 000007 | 8000 | WD.0 | |
| 35 | | | | |
| 36 | | | ZONE 5 8010 | |
| 37 | | | ZEND 5 | |
| 38 | | | | |
| 39 | | | ZONE 6 8800 | |
| 40 | | | LIST 4 5 | |
| 41 | | | ZEND 6 | |
| 42 | 000008 | 8000 | KW | |
| 43 | 000009 | 1800 | WD.0 | |
| 44 | | | | |
| 45 | | | ZONE 7 9600 | |
| 46 | | | LIST 4 5 26 | |
| 47 | | | ZEND 7 | |
| 48 | 00000A | 0000 | KW | |
| 49 | 00000B | 1800 | WD.0 | |
| 50 | 00000C | 0040 | WD.1 | |
| 51 | | | | |
| 52 | | | ZONE 8 9601 | |
| 53 | | | LIST 5 26 | |
| 54 | | | ZEND 8 | |
| 55 | 00000D | 0000 | KW | |
| 56 | 00000E | 0800 | WD.0 | |
| 57 | 00000F | 0040 | WD.1 | |
| 58 | | | | |
| 59 | | | ZONE 9 10400 | |
| 60 | | | LIST 26 | |

0002 .MAIN

| | | |
|----|-------------|---------------------------------------|
| 01 | | ZEND 9 |
| 02 | 00010' 4000 | KW |
| 03 | 00011' 0040 | WD.1 |
| 04 | | |
| 05 | | ZONE 10 10566 |
| 06 | | LIST 26 27 |
| 07 | | ZEND 10 |
| 08 | 00012' 4000 | KW |
| 09 | 00013' 0060 | WD.1 |
| 10 | | |
| 11 | | ZONE 11 11200 |
| 12 | | LIST 27 |
| 13 | | ZEND 11 |
| 14 | 00014' 4000 | KW |
| 15 | 00015' 0020 | WD.1 |
| 16 | | |
| 17 | | ZONE 12 11520 |
| 18 | | ZEND 12 |
| 19 | | |
| 20 | | ZONE 13 11680 |
| 21 | | LIST 28 |
| 22 | | ZEND 13 |
| 23 | 00016' 4000 | KW |
| 24 | 00017' 0010 | WD.1 |
| 25 | | |
| 26 | | ZONE 14 12082 |
| 27 | | LIST 28 29 |
| 28 | | ZEND 14 |
| 29 | 00018' 4000 | KW |
| 30 | 00019' 0018 | WD.1 |
| 31 | | |
| 32 | | ZONE 15 12085 |
| 33 | | LIST 29 |
| 34 | | ZEND 15 |
| 35 | 0001A' 4000 | KW |
| 36 | 0001B' 0008 | WD.1 |
| 37 | | |
| 38 | | ZONE 16 12320 |
| 39 | | ZEND 16 |
| 40 | | |
| 41 | | ZONE 17 12480 |
| 42 | | LIST 30 |
| 43 | | ZEND 17 |
| 44 | 0001C' 4000 | KW |
| 45 | 0001D' 0004 | WD.1 |
| 46 | | |
| 47 | | ZONE 18 12801 |
| 48 | | ZEND 18 |
| 49 | | |
| 50 | | |
| 51 | | |
| 52 | ODA.F: | ***** OUTER-DIRECTORY ADDRESSES ***** |
| 53 | | |
| 54 | | |
| 55 | | |
| 56 | | ZONE 0 0 |
| 57 | | ZEND 0 |
| 58 | 0001E' FFFF | EMPTY |
| 59 | | |
| 60 | | ZONE 1 0400 |

0003 .MAIN

| | | |
|----|-------------|---------------|
| 01 | | LIST 1 2 |
| 02 | | ZEND 1 |
| 03 | 0001F' 0000 | DISPL |
| 04 | | |
| 05 | | ZONE 2 6800 |
| 06 | | LIST 1 2 3 |
| 07 | | ZEND 2 |
| 08 | 00020' 0002 | DISPL |
| 09 | | |
| 10 | | ZONE 3 7200 |
| 11 | | LIST 1 3 |
| 12 | | ZEND 3 |
| 13 | 00021' 0004 | DISPL |
| 14 | | |
| 15 | | ZONE 4 7600 |
| 16 | | LIST 1 |
| 17 | | ZEND 4 |
| 18 | 00022' 0006 | DISPL |
| 19 | | |
| 20 | | ZONE 5 8010 |
| 21 | | ZEND 5 |
| 22 | 00023' FFFF | EMPTY |
| 23 | | |
| 24 | | ZONE 6 8800 |
| 25 | | LIST 4 5 |
| 26 | | ZEND 6 |
| 27 | 00024' 0008 | DISPL |
| 28 | | |
| 29 | | ZONE 7 9600 |
| 30 | | LIST 4 5 26 |
| 31 | | ZEND 7 |
| 32 | 00025' 000A | DISPL |
| 33 | | |
| 34 | | ZONE 8 9601 |
| 35 | | LIST 5 26 |
| 36 | | ZEND 8 |
| 37 | 00026' 0000 | DISPL |
| 38 | | |
| 39 | | ZONE 9 10400 |
| 40 | | LIST 26 |
| 41 | | ZEND 9 |
| 42 | 00027' 0010 | DISPL |
| 43 | | |
| 44 | | ZONE 10 10566 |
| 45 | | LIST 26 27 |
| 46 | | ZEND 10 |
| 47 | 00028' 0012 | DISPL |
| 48 | | |
| 49 | | ZONE 11 11200 |
| 50 | | LIST 27 |
| 51 | | ZEND 11 |
| 52 | 00029' 0014 | DISPL |
| 53 | | |
| 54 | | ZONE 12 11520 |
| 55 | | ZEND 12 |
| 56 | 0002A' FFFF | EMPTY |
| 57 | | |
| 58 | | ZONE 13 11680 |
| 59 | | LIST 28 |
| 60 | | ZEND 13 |

| | |
|------------|------|
| 0005 .MAIN | |
| 01 00038' | 2260 |
| 02 | |
| 03 | |
| 04 | |
| 05 | |
| 06 00039' | 2580 |
| 07 | |
| 08 | |
| 09 | |
| 10 | |
| 11 0003A' | 2581 |
| 12 | |
| 13 | |
| 14 | |
| 15 | |
| 16 0003B' | 2840 |
| 17 | |
| 18 | |
| 19 | |
| 20 | |
| 21 0003C' | 2946 |
| 22 | |
| 23 | |
| 24 | |
| 25 | |
| 26 0003D' | 2800 |
| 27 | |
| 28 | |
| 29 | |
| 30 | |
| 31 0003E' | 2000 |
| 32 | |
| 33 | |
| 34 | |
| 35 0003F' | 20A0 |
| 36 | |
| 37 | |
| 38 | |
| 39 | |
| 40 00040' | 2F32 |
| 41 | |
| 42 | |
| 43 | |
| 44 | |
| 45 00041' | 2F33 |
| 46 | |
| 47 | |
| 48 | |
| 49 | |
| 50 00042' | 3020 |
| 51 | |
| 52 | |
| 53 | |
| 54 00043' | 3000 |
| 55 | |
| 56 | |
| 57 | |
| 58 | |
| 59 00044' | 3201 |
| 60 | |

| |
|---------------|
| 8800 |
| LIST 4 5 |
| ZEND 6 |
| |
| ZONE 7 9600 |
| 9600 |
| LIST 4 5 26 |
| ZEND 7 |
| |
| ZONE 8 9601 |
| 9601 |
| LIST 5 26 |
| ZEND 8 |
| |
| ZONE 9 10400 |
| 10400 |
| LIST 26 |
| ZEND 9 |
| |
| ZONE 10 10566 |
| 10566 |
| LIST 26 27 |
| ZEND 10 |
| |
| ZONE 11 11200 |
| 11200 |
| LIST 27 |
| ZEND 11 |
| |
| ZONE 12 11520 |
| 11520 |
| ZEND 12 |
| |
| ZONE 13 11680 |
| 11680 |
| LIST 28 |
| ZEND 13 |
| |
| ZONE 14 12082 |
| 12082 |
| LIST 28 29 |
| ZEND 14 |
| |
| ZONE 15 12083 |
| 12083 |
| LIST 29 |
| ZEND 15 |
| |
| ZONE 16 12320 |
| 12320 |
| ZEND 16 |
| |
| ZONE 17 12480 |
| 12480 |
| LIST 30 |
| ZEND 17 |
| |
| ZONE 18 12801 |
| 12801 |
| ZEND 18 |

0006 .MAIN

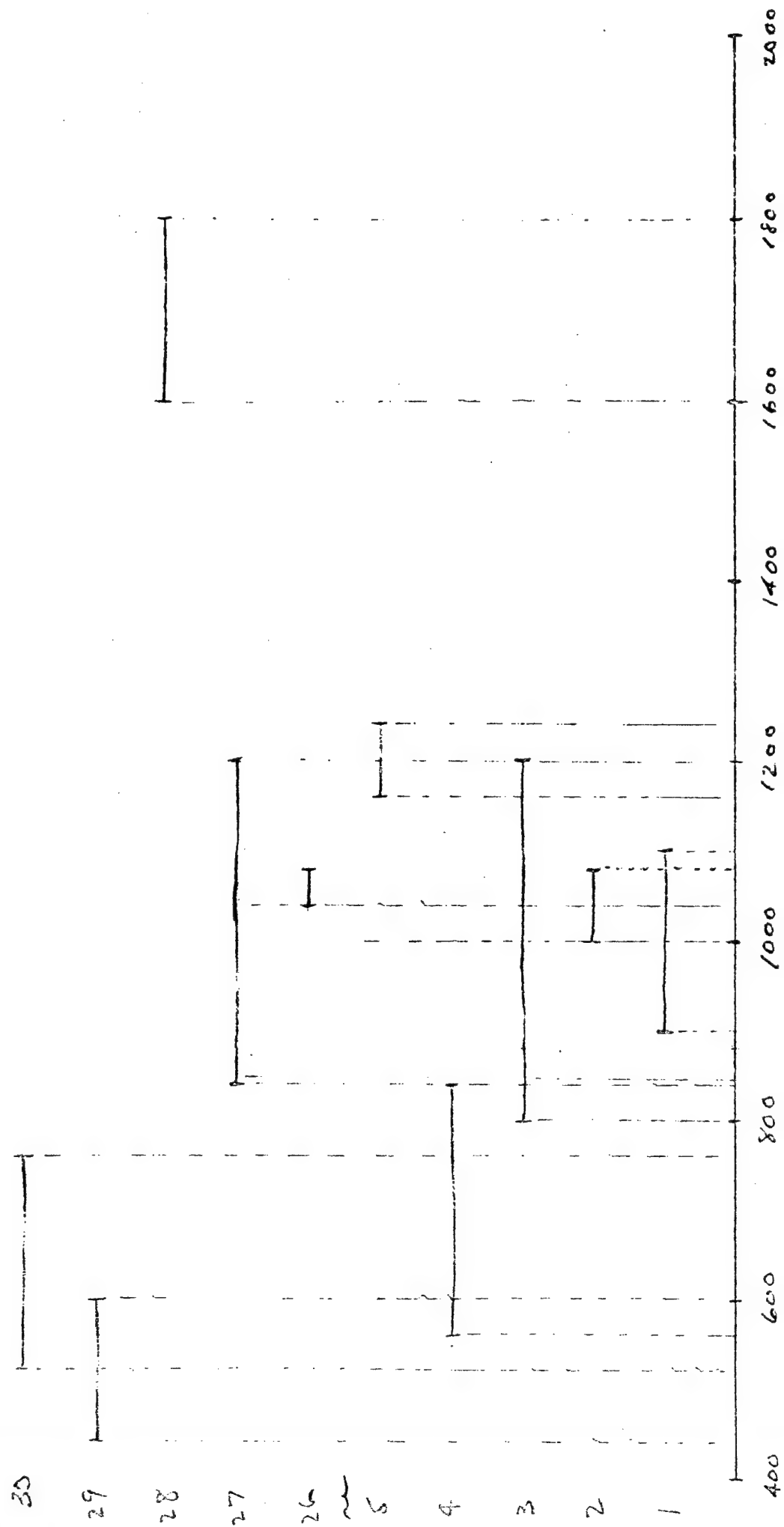
01

02

03

.END

ZLS.F



PRI, μ sec

CTEVE: LTRPJLSR

N. PJ = 19

| | | | |
|----|--------|-------|--------|
| 01 | | .NREL | |
| 02 | | .ENT | ZLS.P1 |
| 03 | 000012 | .RDX | 10 |
| 04 | 0010 | .RDX0 | 16 |
| 05 | | | |
| 06 | | | |
| 07 | | | |

ZLS.P1: ;**** KWL/BV ZONE LISTS ****

| | | |
|----|-------------|--------------|
| 10 | | ZONE 1 000 |
| 11 | | ZEND 1 |
| 12 | | |
| 13 | | ZONE 2 440 |
| 14 | | LIST 29 |
| 15 | | ZEND 2 |
| 16 | 00000' 4000 | KW |
| 17 | 00001' 0008 | WD.1 |
| 18 | | |
| 19 | | ZONE 3 521 |
| 20 | | LIST 29 30 |
| 21 | | ZEND 3 |
| 22 | 00002' 4000 | KW |
| 23 | 00003' 000C | WD.1 |
| 24 | | |
| 25 | | ZONE 4 560 |
| 26 | | LIST 4 29 30 |
| 27 | | ZEND 4 |
| 28 | 00004' C000 | KW |
| 29 | 00005' 1000 | WD.0 |
| 30 | 00006' 000C | WD.1 |
| 31 | | |
| 32 | | ZONE 5 600 |
| 33 | | LIST 4 30 |
| 34 | | ZEND 5 |
| 35 | 00007' C000 | KW |
| 36 | 00008' 1000 | WD.0 |
| 37 | 00009' 0004 | WD.1 |
| 38 | | |
| 39 | | ZONE 6 760 |
| 40 | | LIST 4 |
| 41 | | ZEND 6 |
| 42 | 0000A' 8000 | KW |
| 43 | 0000B' 1000 | WD.0 |
| 44 | | |
| 45 | | ZONE 7 800 |
| 46 | | LIST 3 4 |
| 47 | | ZEND 7 |
| 48 | 0000C' 8000 | KW |
| 49 | 0000D' 3000 | WD.0 |
| 50 | | |
| 51 | | ZONE 8 840 |
| 52 | | LIST 3 4 27 |
| 53 | | ZEND 8 |
| 54 | 0000E' C000 | KW |
| 55 | 0000F' 3000 | WD.0 |
| 56 | 00010' 0020 | WD.1 |
| 57 | | |
| 58 | | ZONE 9 841 |
| 59 | | LIST 3 27 |
| 60 | | ZEND 9 |

```

0002 .MAIN
01 00011' C000 KW
02 00012' 2000 WD.0
03 00013' 0020 WD.1
04
05 ZONE 10 845
06 LIST 1 3 27
07 ZEND 10
08 00014' C000 KW
09 00015' A000 WD.0
10 00016' 0020 WD.1
11
12 ZONE 11 1000
13 LIST 1 2 3 27
14 ZEND 11
15 00017' C000 KW
16 00018' E000 WD.0
17 00019' 0020 WD.1
18
19 ZONE 12 1040
20 LIST 1 2 3 26 27
21 ZEND 12
22 0001A' C000 KW
23 0001B' E000 WD.0
24 0001C' 0060 WD.1
25
26 ZONE 13 1080
27 DUPL 10
28 ZEND 13
29
30 ZONE 14 1103
31 DUPL 9
32 ZEND 14
33
34 ZONE 15 1160
35 LIST 3 5 27
36 ZEND 15
37 0001D' C000 KW
38 0001E' 2800 WD.0
39 0001F' 0020 WD.1
40
41 ZONE 16 1200
42 LIST 5
43 ZEND 16
44 00020' 8000 KW
45 00021' 0800 WD.0
46
47 ZONE 17 1240
48 ZEND 17
49
50 ZONE 18 1600
51 LIST 28
52 ZEND 18
53 00022' 4000 KW
54 00023' 0010 WD.1
55
56 ZONE 19 1800
57 ZEND 19
58
59 .ENDC
60

```

0005 .MAIN

01

02

00A.PI:

;**** OUTER-DIRECTORY ADDRESSES ****

03

04

05

06

ZONE 1 000

07

ZEND 1

08 00024' FFFF

EMPTY

09

10

ZONE 2 440

11

LIST 29

12

ZEND 2

13 00025' 0000

DISPL

14

15

ZONE 3 521

16

LIST 29 30

17

ZEND 3

18 00026' 0002

DISPL

19

20

ZONE 4 560

21

LIST 4 29 30

22

ZEND 4

23 00027' 0004

DISPL

24

25

ZONE 5 600

26

LIST 4 30

27

ZEND 5

28 00028' 0007

DISPL

29

30

ZONE 6 760

31

LIST 4

32

ZEND 6

33 00029' 000A

DISPL

34

35

ZONE 7 800

36

LIST 3 4

37

ZEND 7

38 0002A' 000C

DISPL

39

40

ZONE 8 840

41

LIST 3 4 27

42

ZEND 8

43 0002B' 000E

DISPL

44

45

ZONE 9 841

46

LIST 3 27

47

ZEND 9

48 0002C' 0011

DISPL

49

50

ZONE 10 895

51

LIST 1 3 27

52

ZEND 10

53 0002D' 0014

DISPL

54

55

ZONE 11 1000

56

LIST 1 2 3 27

57

ZEND 11

58 0002E' 0017

DISPL

59

60

ZONE 12 1040

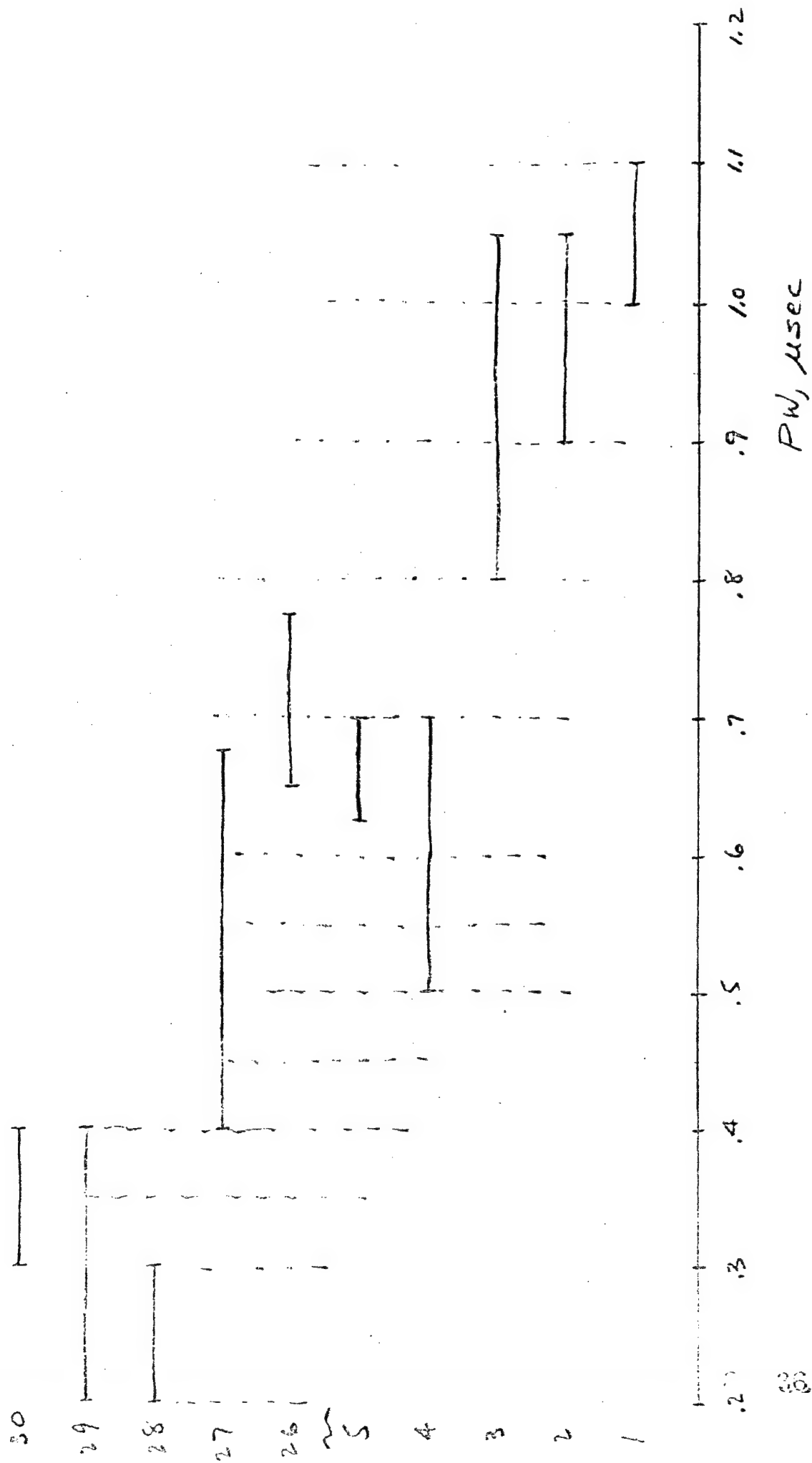
```

0004 .MAIN
01 LIST 1 2 3 26 27
02 ZEND 12
03 0002F' 001A DISPL
04
05 ZONE 13 1080
06 DUPL 10
07 ZEND 13
08 00030' 0014 DISPL
09
10 ZONE 14 1103
11 DUPL 9
12 ZEND 14
13 00031' 0011 DISPL
14
15 ZONE 15 1160
16 LIST 3 5 27
17 ZEND 15
18 00032' 0010 DISPL
19
20 ZONE 16 1200
21 LIST 5
22 ZEND 16
23 00033' 0020 DISPL
24
25 ZONE 17 1240
26 ZEND 17
27 00034' FFFF EMPTY
28
29 ZONE 18 1600
30 LIST 28
31 ZEND 18
32 00035' 0022 DISPL
33
34 ZONE 19 1800
35 ZEND 19
36 00036' FFFF EMPTY
37
38 .ENDC
39
40
41
42 00037' 0013 DDV.PI: ZCT ;**** OUTER-DIRECTORY VALUES ****
43
44
45 ZONE 1 000
46 00038' 0000 000
47 ZEND 1
48
49 ZONE 2 440
50 00039' 0188 440
51 LIST 29
52 ZEND 2
53
54 ZONE 3 521
55 0003A' 0209 521
56 LIST 29 30
57 ZEND 3
58
59 ZONE 4 560
60 0003B' 0230 560

```

| 0005 .MAIN | | |
|------------|-------------|------------------|
| 01 | | LIST 4 29 30 |
| 02 | | ZEND 4 |
| 03 | | |
| 04 | | ZONE 5 600 |
| 05 | 0003C' 0258 | 600 |
| 06 | | LIST 4 30 |
| 07 | | ZEND 5 |
| 08 | | |
| 09 | | ZONE 6 760 |
| 10 | 0003D' 02F8 | 760 |
| 11 | | LIST 4 |
| 12 | | ZEND 6 |
| 13 | | |
| 14 | | ZONE 7 800 |
| 15 | 0003E' 0320 | 800 |
| 16 | | LIST 3 4 |
| 17 | | ZEND 7 |
| 18 | | |
| 19 | | ZONE 8 840 |
| 20 | 0003F' 0348 | 840 |
| 21 | | LIST 3 4 27 |
| 22 | | ZEND 8 |
| 23 | | |
| 24 | | ZONE 9 841 |
| 25 | 00040' 0349 | 841 |
| 26 | | LIST 3 27 |
| 27 | | ZEND 9 |
| 28 | | |
| 29 | | ZONE 10 895 |
| 30 | 00041' 037F | 895 |
| 31 | | LIST 1 3 27 |
| 32 | | ZEND 10 |
| 33 | | |
| 34 | | ZONE 11 1000 |
| 35 | 00042' 03E8 | 1000 |
| 36 | | LIST 1 2 3 27 |
| 37 | | ZEND 11 |
| 38 | | |
| 39 | | ZONE 12 1040 |
| 40 | 00043' 0410 | 1040 |
| 41 | | LIST 1 2 3 26 27 |
| 42 | | ZEND 12 |
| 43 | | |
| 44 | | ZONE 13 1080 |
| 45 | 00044' 0438 | 1080 |
| 46 | | DUPL 10 |
| 47 | | ZEND 13 |
| 48 | | |
| 49 | | ZONE 14 1103 |
| 50 | 00045' 044F | 1103 |
| 51 | | DUPL 9 |
| 52 | | ZEND 14 |
| 53 | | |
| 54 | | ZONE 15 1160 |
| 55 | 00046' 0488 | 1160 |
| 56 | | LIST 3 5 27 |
| 57 | | ZEND 15 |
| 58 | | |
| 59 | | ZONE 16 1200 |
| 60 | 00047' 0480 | 1200 |

| | |
|----------------|--------------|
| 0006 .MAIN | |
| 01 | LIST 5 |
| 02 | ZEND 16 |
| 03 | |
| 04 | ZONE 17 1240 |
| 05 00048' 0408 | 1240 |
| 06 | ZEND 17 |
| 07 | |
| 08 | ZONE 18 1600 |
| 09 00049' 0640 | 1600 |
| 10 | LIST 28 |
| 11 | ZEND 18 |
| 12 | |
| 13 | ZONE 19 1800 |
| 14 0004A' 0708 | 1800 |
| 15 | ZEND 19 |
| 16 | |
| 17 | .ENDC |
| 18 | |
| 19 | .END ZLS.P1 |



ELI - PW

STEVE: LIBP1.SR

| | TRUNKS | ODA.PW | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | ELS.PW |
|----|----------|--------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|--------|
| 0 | EMPTY | -1 | 1 | | | | | | | | | | | | | | | 0 | 4000 |
| 1 | 28, 29 | 0 | | | | | | | | | | 1 | 1 | | | | | 2 | 0018 |
| 2 | 29, 30 | 2 | 1 | | | | | | | | | | | | | | | 2 | 4000 |
| 3 | 29, 30 | 2 | | | | | | | | | | | | 1 | 1 | | | | 0000 |
| 4 | 27 | 4 | 1 | | | | | | | | | | | | | | | 4 | 4000 |
| 5 | 27 | 4 | | | | | | | | | | 1 | | | | | | | 0020 |
| 6 | 4, 27 | 6 | 1 | 1 | | | | | | | | | | | | | | 6 | 0000 |
| 7 | 4, 27 | 6 | | | | 1 | | | | | | | | | | | | | 1000 |
| 8 | 4, 5, 26 | 9 | | | | | | | | | | 1 | | | | | | | 0020 |
| 9 | 26 | 12 | 1 | 1 | | | | | | | | | | | | | | 9 | 0000 |
| 10 | 3 | 14 | | | | 1 | 1 | | | | | | | | | | | | 1800 |
| 11 | 2, 3 | 16 | | | | | | | | | 1 | | | | | | | | 0040 |
| 12 | 1, 2, 3 | 18 | 1 | | | | | | | | | | | | | | | 12 | 4000 |
| 13 | EMPTY | -1 | | | | | | | | | 1 | | | | | | | | 0040 |
| 14 | | -1 | 1 | | | | | | | | | | | | | | | 14 | 8000 |
| 15 | | | | | | 1 | | | | | | | | | | | | | 2000 |
| 16 | | | 1 | | | | | | | | | | | | | | | 16 | 8000 |
| 17 | | | | | 1 | 1 | | | | | | | | | | | | | 6000 |
| 18 | | | 1 | | | | | | | | | | | | | | | 18 | 8000 |
| 19 | | | 1 | 1 | 1 | | | | | | | | | | | | | | 8000 |
| 20 | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | |
| 31 | EMPTY | -1 | | | | | | | | | | | | | | | | | |

| | | | | |
|----|--------|--------|-------------|------------------------------|
| 01 | | | .INREL | |
| 02 | | | .ENT | ZLS.P |
| 03 | 000012 | | .RDX | 10 |
| 04 | 0010 | | .RDXU | 16 |
| 05 | | | | |
| 06 | | | | |
| 07 | | | | |
| 08 | | ZLS.P: | | ;**** KWC/BV ZONE LISTS **** |
| 09 | | | | |
| 10 | | | ZONE 0 | |
| 11 | | | ZEND 0 | |
| 12 | | | | |
| 13 | | | ZONE 1 | |
| 14 | | | LIST 28 29 | |
| 15 | | | ZEND 1 | |
| 16 | 000001 | 4000 | KW | |
| 17 | 000011 | 0018 | WD.1 | |
| 18 | | | | |
| 19 | | | ZONE 2 | |
| 20 | | | LIST 29 30 | |
| 21 | | | ZEND 2 | |
| 22 | 000021 | 4000 | KW | |
| 23 | 000031 | 0000 | WD.1 | |
| 24 | | | | |
| 25 | | | ZONE 3 | |
| 26 | | | DUPL 2 | |
| 27 | | | ZEND 3 | |
| 28 | | | | |
| 29 | | | ZONE 4 | |
| 30 | | | LIST 27 | |
| 31 | | | ZEND 4 | |
| 32 | 000041 | 4000 | KW | |
| 33 | 000051 | 0020 | WD.1 | |
| 34 | | | | |
| 35 | | | ZONE 5 | |
| 36 | | | DUPL 4 | |
| 37 | | | ZEND 5 | |
| 38 | | | | |
| 39 | | | ZONE 6 | |
| 40 | | | LIST 4 27 | |
| 41 | | | ZEND 6 | |
| 42 | 000061 | 0000 | KW | |
| 43 | 000071 | 1000 | WD.0 | |
| 44 | 000081 | 0020 | WD.1 | |
| 45 | | | | |
| 46 | | | ZONE 7 | |
| 47 | | | DUPL 6 | |
| 48 | | | ZEND 7 | |
| 49 | | | | |
| 50 | | | ZONE 8 | |
| 51 | | | LIST 4 5 26 | |
| 52 | | | ZEND 8 | |
| 53 | 000091 | 0000 | KW | |
| 54 | 0000A1 | 1800 | WD.0 | |
| 55 | 0000B1 | 0040 | WD.1 | |
| 56 | | | | |
| 57 | | | ZONE 9 | |
| 58 | | | LIST 20 | |
| 59 | | | ZEND 9 | |
| 60 | 0000C1 | 4000 | KW | |

0002 .MAIN

| | | | |
|----|--------|------|------------|
| 01 | 00000' | 0040 | WD.1 |
| 02 | | | |
| 03 | | | ZONE 10 |
| 04 | | | LIST 3 |
| 05 | | | ZEND 10 |
| 06 | 0000E' | 8000 | KW |
| 07 | 0000F' | 2000 | WD.0 |
| 08 | | | |
| 09 | | | ZONE 11 |
| 10 | | | LIST 2 3 |
| 11 | | | ZEND 11 |
| 12 | 00010' | 8000 | KW |
| 13 | 00011' | 6000 | WD.0 |
| 14 | | | |
| 15 | | | ZONE 12 |
| 16 | | | LIST 1 2 3 |
| 17 | | | ZEND 12 |
| 18 | 00012' | 8000 | KW |
| 19 | 00013' | 6000 | WD.0 |
| 20 | | | |
| 21 | | | ZONE 13 |
| 22 | | | ZEND 13 |
| 23 | | | |
| 24 | | | ZONE 14 |
| 25 | | | ZEND 14 |
| 26 | | | |
| 27 | | | ZONE 15 |
| 28 | | | ZEND 15 |
| 29 | | | |
| 30 | | | ZONE 16 |
| 31 | | | ZEND 16 |
| 32 | | | |
| 33 | | | ZONE 17 |
| 34 | | | ZEND 17 |
| 35 | | | |
| 36 | | | ZONE 18 |
| 37 | | | ZEND 18 |
| 38 | | | |
| 39 | | | ZONE 19 |
| 40 | | | ZEND 19 |
| 41 | | | |
| 42 | | | ZONE 20 |
| 43 | | | ZEND 20 |
| 44 | | | |
| 45 | | | ZONE 21 |
| 46 | | | ZEND 21 |
| 47 | | | |
| 48 | | | ZONE 22 |
| 49 | | | ZEND 22 |
| 50 | | | |
| 51 | | | ZONE 23 |
| 52 | | | ZEND 23 |
| 53 | | | |
| 54 | | | ZONE 24 |
| 55 | | | ZEND 24 |
| 56 | | | |
| 57 | | | ZONE 25 |
| 58 | | | ZEND 25 |
| 59 | | | |
| 60 | | | ZONE 26 |

0003 .MAIN

| | | |
|----|-------------|--------------------------------------|
| 01 | | ZEND 26 |
| 02 | | |
| 03 | | ZONE 27 |
| 04 | | ZEND 27 |
| 05 | | |
| 06 | | ZONE 28 |
| 07 | | ZEND 28 |
| 08 | | |
| 09 | | ZONE 29 |
| 10 | | ZEND 29 |
| 11 | | |
| 12 | | ZONE 30 |
| 13 | | ZEND 30 |
| 14 | | |
| 15 | | ZONE 31 |
| 16 | | ZEND 31 |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | ODA.P: | ;**** OUTER-DIRECTORY ADDRESSES **** |
| 21 | | |
| 22 | | |
| 23 | | |
| 24 | | ZONE 0 |
| 25 | | ZEND 0 |
| 26 | 00014' FFFF | EMPTY |
| 27 | | |
| 28 | | ZONE 1 |
| 29 | | LIST 28 29 |
| 30 | | ZEND 1 |
| 31 | 00015' 0000 | DISPL |
| 32 | | |
| 33 | | ZONE 2 |
| 34 | | LIST 29 30 |
| 35 | | ZEND 2 |
| 36 | 00016' 0002 | DISPL |
| 37 | | |
| 38 | | ZONE 3 |
| 39 | | DUPL 2 |
| 40 | | ZEND 3 |
| 41 | 00017' 0002 | DISPL |
| 42 | | |
| 43 | | ZONE 4 |
| 44 | | LIST 27 |
| 45 | | ZEND 4 |
| 46 | 00018' 0004 | DISPL |
| 47 | | |
| 48 | | ZONE 5 |
| 49 | | DUPL 4 |
| 50 | | ZEND 5 |
| 51 | 00019' 0004 | DISPL |
| 52 | | |
| 53 | | ZONE 6 |
| 54 | | LIST 4 27 |
| 55 | | ZEND 6 |
| 56 | 0001A' 0006 | DISPL |
| 57 | | |
| 58 | | ZONE 7 |
| 59 | | DUPL 6 |
| 60 | | ZEND 7 |

```

0004 .MAIN
01 0001B' 0006      DISPL
02
03      ZONE 8
04      LIST 4 5 26
05      ZEND 8
06 0001C' 0009      DISPL
07
08      ZONE 9
09      LIST 26
10      ZEND 9
11 0001D' 000C      DISPL
12
13      ZONE 10
14      LIST 3
15      ZEND 10
16 0001E' 000E      DISPL
17
18      ZONE 11
19      LIST 2 3
20      ZEND 11
21 0001F' 0010      DISPL
22
23      ZONE 12
24      LIST 1 2 3
25      ZEND 12
26 00020' 0012      DISPL
27
28      ZONE 13
29      ZEND 13
30 00021' FFFF      EMPTY
31
32      ZONE 14
33      ZEND 14
34 00022' FFFF      EMPTY
35
36      ZONE 15
37      ZEND 15
38 00023' FFFF      EMPTY
39
40      ZONE 16
41      ZEND 16
42 00024' FFFF      EMPTY
43
44      ZONE 17
45      ZEND 17
46 00025' FFFF      EMPTY
47
48      ZONE 18
49      ZEND 18
50 00026' FFFF      EMPTY
51
52      ZONE 19
53      ZEND 19
54 00027' FFFF      EMPTY
55
56      ZONE 20
57      ZEND 20
58 00028' FFFF      EMPTY
59
60      ZONE 21

```

```

0005 .MAIN
01          ZEND 21
02 00029'   FFFF   EMPTY
03
04          ZONE 22
05          ZEND 22
06 0002A'   FFFF   EMPTY
07
08          ZONE 23
09          ZEND 23
10 0002B'   FFFF   EMPTY
11
12          ZONE 24
13          ZEND 24
14 0002C'   FFFF   EMPTY
15
16          ZONE 25
17          ZEND 25
18 0002D'   FFFF   EMPTY
19
20          ZONE 26
21          ZEND 26
22 0002E'   FFFF   EMPTY
23
24          ZONE 27
25          ZEND 27
26 0002F'   FFFF   EMPTY
27
28          ZONE 28
29          ZEND 28
30 00030'   FFFF   EMPTY
31
32          ZONE 29
33          ZEND 29
34 00031'   FFFF   EMPTY
35
36          ZONE 30
37          ZEND 30
38 00032'   FFFF   EMPTY
39
40          ZONE 31
41          ZEND 31
42 00033'   FFFF   EMPTY
43
44
45          .END      ZLS.P

```

1 L2 DECIMAL INPUT

| Entry (Grp) WD | 1 | 2 | 3 |
|-------------------|----------------------|--------|----------------------------------|
| 0 | 10 | 10 | 30 |
| 1 | 10 11 | 10 11 | 20 12 |
| 2 | 0001 | 0002 | 0003 |
| 3 | 1 1023 | 1 1023 | 2 1023 |
| 5 | 60 35 | 70 82 | 30 ¹²⁶ 212 |
| 6 | 200 | 200 | 200 |
| | 4 | 5 | 6 |
| 0 | 20 | 20 | 20 |
| 1 | 102 | 104 | 404 |
| 2 | 0004 | 0005 | 0006 |
| 3 | 2 1023 | 2 1023 | 3 1023 |
| 5 | 20 117 | 20 166 | 30 71 |
| 6 | 100 | 100 | 200 |
| | 7 | 8 | 9 |
| 0 | 20 | 30 | 30 |
| 1 | 105 | 20 12 | 20 12 |
| 2 | 0007 | 0008 | 0009 |
| 3 | 3 1023 | 4 1023 | 4 1023 |
| 5 | 20 212 50 | 40 2 | 40 12 |
| 6 | 100 | 1500 | 1500 |

FL2 HEL OUTPUT

1

1 0 0 0
2 0 0 B
0 0 0 1
1 3 F F
0 0 0 0
6 0 2 3
2 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0

2

1 0 0 0
2 0 0 B
0 0 0 2
1 3 F F
0 0 0 0
7 0 5 2
2 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0

3

3 0 0 0
4 0 0 C
0 0 0 3
2 3 F F
0 0 0 0
3 0 7 E
2 0 0 0
0 0 0 0
↓
0 0 0 0

4

2 0 0 0
2 0 0 2
0 0 0 4
2 3 F F
0 0 0 0
2 0 7 5
1 0 0 0
0 0 0 0
↓
0 0 0 0

5

2 0 0 0
2 0 0 4
0 0 0 5
2 3 F F
0 0 0 0
2 6 A 6
1 0 0 0
0 0 0 0
↓
0 0 0 0

6

2 0 0 6
8 0 0 4
0 0 0 6
3 3 F F
0 0 0 0
3 0 4 7
2 0 0 0
0 0 0 0
↓
0 0 0 0

7

2 0 0 0
2 0 0 5
0 0 0 7
3 3 F F
0 0 0 0
2 0 3 2
1 0 0 0
0 0 0 0
↓
0 0 0 0

8

3 0 0 0
4 0 0 C
0 0 0 8
4 3 F F
0 0 0 0
4 0 0 2
F 0 0 0
0 0 0 0
↓
0 0 0 0

9

0 0 0 0
4 0 0 C
0 0 0 9
4 3 F F
0 0 0 0
4 0 0 C
0 0 0 0
0 0 0 0
↓
0 0 0 0

| | | | | |
|----|--------|-------|--------|---------|
| 01 | | | .NKEL | |
| 02 | | | .ENI | EL21 |
| 03 | 000012 | | .RDX | 10 |
| 04 | 0010 | | .RDXU | 16 |
| 05 | | | | |
| 06 | | EL21: | EL2 | |
| 07 | | | E2WD 0 | 1 0 |
| 08 | | | E2WD 1 | 1 0 11 |
| 09 | | | E2WD 2 | 0 0 0 1 |
| 10 | | | E2WD 3 | 1 1023 |
| 11 | | | E2WD 5 | 6 0 35 |
| 12 | | | E2WD 6 | 2 0 0 |
| 13 | | | E2END | |
| 14 | 00000' | 1000 | WD.0 | |
| 15 | 00001' | 2008 | WD.1 | |
| 16 | 00002' | 0001 | WD.2 | |
| 17 | 00003' | 13FF | WD.3 | |
| 18 | 00005' | 6023 | WD.5 | |
| 19 | 00006' | 2000 | WD.6 | |
| 20 | | | | |
| 21 | | | EL2 | |
| 22 | | | E2WD 0 | 1 0 |
| 23 | | | E2WD 1 | 1 0 11 |
| 24 | | | E2WD 2 | 0 0 0 2 |
| 25 | | | E2WD 3 | 1 1023 |
| 26 | | | E2WD 5 | 7 0 82 |
| 27 | | | E2WD 6 | 2 0 0 |
| 28 | | | E2END | |
| 29 | 00008' | 1000 | WD.0 | |
| 30 | 00000' | 2008 | WD.1 | |
| 31 | 00000' | 0002 | WD.2 | |
| 32 | 0000E' | 13FF | WD.3 | |
| 33 | 00010' | 7052 | WD.5 | |
| 34 | 00011' | 2000 | WD.6 | |
| 35 | | | | |
| 36 | | | EL2 | |
| 37 | | | E2WD 0 | 3 0 |
| 38 | | | E2WD 1 | 2 0 12 |
| 39 | | | E2WD 2 | 0 0 0 3 |
| 40 | | | E2WD 3 | 2 1023 |
| 41 | | | E2WD 5 | 3 0 126 |
| 42 | | | E2WD 6 | 2 0 0 |
| 43 | | | E2END | |
| 44 | 00016' | 3000 | WD.0 | |
| 45 | 00017' | 400C | WD.1 | |
| 46 | 00018' | 0003 | WD.2 | |
| 47 | 00019' | 23FF | WD.3 | |
| 48 | 00018' | 307E | WD.5 | |
| 49 | 0001C' | 2000 | WD.6 | |
| 50 | | | | |
| 51 | | | EL2 | |
| 52 | | | E2WD 0 | 2 0 |
| 53 | | | E2WD 1 | 1 0 2 |
| 54 | | | E2WD 2 | 0 0 0 4 |
| 55 | | | E2WD 3 | 2 1023 |
| 56 | | | E2WD 5 | 2 0 117 |
| 57 | | | E2WD 6 | 1 0 0 |
| 58 | | | E2END | |
| 59 | 00021' | 2000 | WD.0 | |
| 60 | 00022' | 2002 | WD.1 | |

| | | |
|------------|--------|----------------|
| 0002 .MAIN | | |
| 01 | 00023' | 0004 WD.2 |
| 02 | 00024' | 23FF WD.3 |
| 03 | 00026' | 2075 WD.5 |
| 04 | 00027' | 1000 WD.6 |
| 05 | | |
| 06 | | EL2 |
| 07 | | E2WD 0 2 0 |
| 08 | | E2WD 1 1 0 4 |
| 09 | | E2WD 2 0 0 0 5 |
| 10 | | E2WD 3 2 1023 |
| 11 | | E2WD 5 2 0 166 |
| 12 | | E2WD 6 1 0 0 |
| 13 | | E2END |
| 14 | 00020' | 2000 WD.0 |
| 15 | 00020' | 2004 WD.1 |
| 16 | 0002E' | 0005 WD.2 |
| 17 | 0002F' | 23FF WD.3 |
| 18 | 00031' | 20A6 WD.5 |
| 19 | 00032' | 1000 WD.6 |
| 20 | | |
| 21 | | EL2 |
| 22 | | E2WD 0 2 0 |
| 23 | | E2WD 1 4 0 4 |
| 24 | | E2WD 2 0 0 0 6 |
| 25 | | E2WD 3 3 1023 |
| 26 | | E2WD 5 3 0 71 |
| 27 | | E2WD 6 2 0 0 |
| 28 | | E2END |
| 29 | 00037' | 2000 WD.0 |
| 30 | 00038' | 8004 WD.1 |
| 31 | 00039' | 0006 WD.2 |
| 32 | 0003A' | 33FF WD.3 |
| 33 | 0003C' | 3047 WD.5 |
| 34 | 0003D' | 2000 WD.6 |
| 35 | | |
| 36 | | EL2 |
| 37 | | E2WD 0 2 0 |
| 38 | | E2WD 1 1 0 5 |
| 39 | | E2WD 2 0 0 0 7 |
| 40 | | E2WD 3 3 1023 |
| 41 | | E2WD 5 2 0 50 |
| 42 | | E2WD 6 1 0 0 |
| 43 | | E2END |
| 44 | 00042' | 2000 WD.0 |
| 45 | 00043' | 2005 WD.1 |
| 46 | 00044' | 0007 WD.2 |
| 47 | 00045' | 33FF WD.3 |
| 48 | 00047' | 2032 WD.5 |
| 49 | 00048' | 1000 WD.6 |
| 50 | | |
| 51 | | EL2 |
| 52 | | E2WD 0 3 0 |
| 53 | | E2WD 1 2 0 12 |
| 54 | | E2WD 2 0 0 0 8 |
| 55 | | E2WD 3 4 1023 |
| 56 | | E2WD 5 4 0 2 |
| 57 | | E2WD 6 15 0 0 |
| 58 | | E2END |
| 59 | 0004D' | 3000 WD.0 |
| 60 | 0004E' | 400C WD.1 |

| | | |
|------------|--------|----------------|
| 0005 .MAIN | | |
| 01 | 0004F' | 0008 WD.2 |
| 02 | 00050' | 43FF WD.3 |
| 03 | 00052' | 4002 WD.5 |
| 04 | 00053' | F000 WD.6 |
| 05 | | |
| 06 | | EL2 |
| 07 | | E2WD 0 3 0 |
| 08 | | E2WD 1 2 0 12 |
| 09 | | E2WD 2 0 0 0 9 |
| 10 | | E2WD 3 4 1023 |
| 11 | | E2WD 5 4 0 12 |
| 12 | | E2WD 6 15 0 0 |
| 13 | | E2END |
| 14 | 00058' | 3000 WD.0 |
| 15 | 00059' | 400C WD.1 |
| 16 | 0005A' | 0009 WD.2 |
| 17 | 0005B' | 43FF WD.3 |
| 18 | 0005D' | 400C WD.5 |
| 19 | 0005E' | F000 WD.6 |
| 20 | | |
| 21 | | .END EL21 |

0004 .MAIN

| | | | | | | | | | |
|-------------|------------------|----|------|------|------|------|------|------|------|
| CLEAR | 000007 | MC | 1/07 | 1/22 | 1/37 | 1/52 | 2/07 | 2/22 | 2/37 |
| | | | 2/52 | 3/07 | | | | | |
| E2END | 000105 | MC | 1/13 | 1/28 | 1/43 | 1/58 | 2/13 | 2/28 | 2/43 |
| | | | 2/58 | 3/13 | | | | | |
| E2WD | 00010E | MC | 1/07 | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 |
| | | | 1/22 | 1/23 | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 |
| | | | 1/37 | 1/38 | 1/39 | 1/40 | 1/41 | 1/42 | 1/43 |
| | | | 1/52 | 1/53 | 1/54 | 1/55 | 1/56 | 1/57 | 1/58 |
| | | | 2/07 | 2/08 | 2/09 | 2/10 | 2/11 | 2/12 | 2/13 |
| | | | 2/22 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 | 2/28 |
| | | | 2/37 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| | | | 2/52 | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 |
| | | | 3/07 | 3/08 | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 |
| | | | 1/06 | 1/21 | 1/36 | 1/51 | 2/06 | 2/21 | 2/36 |
| | | | 2/51 | 3/06 | | | | | |
| | | | 1/02 | 1/06 | 3/21 | | | | |
| EL21 ERR | 000000 000000 | EN | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 | 1/23 |
| | | | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 | 1/38 | 1/39 |
| | | | 1/40 | 1/41 | 1/42 | 1/43 | 1/53 | 1/54 | 1/55 |
| | | | 1/56 | 1/57 | 1/58 | 2/08 | 2/09 | 2/10 | 2/11 |
| | | | 2/12 | 2/13 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 |
| | | | 2/28 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| | | | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 | 3/08 |
| | | | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 | | |
| | | | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 | 1/23 |
| | | | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 | 1/38 | 1/39 |
| | | | 1/40 | 1/41 | 1/42 | 1/43 | 1/53 | 1/54 | 1/55 |
| | | | 1/56 | 1/57 | 1/58 | 2/08 | 2/09 | 2/10 | 2/11 |
| ERROR | 00000E | MC | 2/12 | 2/13 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 |
| | | | 2/28 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| | | | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 | 3/08 |
| | | | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 | | |
| | | | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 | 1/23 |
| | | | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 | 1/38 | 1/39 |
| | | | 1/40 | 1/41 | 1/42 | 1/43 | 1/53 | 1/54 | 1/55 |
| | | | 1/56 | 1/57 | 1/58 | 2/08 | 2/09 | 2/10 | 2/11 |
| | | | 2/12 | 2/13 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 |
| | | | 2/28 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| | | | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 | 3/08 |
| | | | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 | | |
| GENE2 | 00013E | MC | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 | 1/23 |
| | | | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 | 1/38 | 1/39 |
| | | | 1/40 | 1/41 | 1/42 | 1/43 | 1/53 | 1/54 | 1/55 |
| | | | 1/56 | 1/57 | 1/58 | 2/08 | 2/09 | 2/10 | 2/11 |
| | | | 2/12 | 2/13 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 |
| | | | 2/28 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| | | | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 | 3/08 |
| | | | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 | | |
| | | | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 | 1/23 |
| | | | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 | 1/38 | 1/39 |
| | | | 1/40 | 1/41 | 1/42 | 1/43 | 1/53 | 1/54 | 1/55 |
| | | | 1/56 | 1/57 | 1/58 | 2/08 | 2/09 | 2/10 | 2/11 |
| QOB | 00016A | MC | 2/12 | 2/13 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 |
| | | | 2/28 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| | | | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 | 3/08 |
| | | | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 | | |
| | | | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 | 1/23 |
| | | | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 | 1/38 | 1/39 |
| | | | 1/40 | 1/41 | 1/42 | 1/43 | 1/53 | 1/54 | 1/55 |
| | | | 1/56 | 1/57 | 1/58 | 2/08 | 2/09 | 2/10 | 2/11 |
| | | | 2/12 | 2/13 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 |
| | | | 2/28 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| | | | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 | 3/08 |
| | | | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 | | |
| QQQQ | 0000F5 | MC | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 | 1/23 |
| | | | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 | 1/38 | 1/39 |
| | | | 1/40 | 1/41 | 1/42 | 1/43 | 1/53 | 1/54 | 1/55 |
| | | | 1/56 | 1/57 | 1/58 | 2/08 | 2/09 | 2/10 | 2/11 |
| | | | 2/12 | 2/13 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 |
| | | | 2/28 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| | | | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 | 3/08 |
| | | | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 | | |
| | | | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 | 1/23 |
| | | | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 | 1/38 | 1/39 |
| | | | 1/40 | 1/41 | 1/42 | 1/43 | 1/53 | 1/54 | 1/55 |
| | | | 1/56 | 1/57 | 1/58 | 2/08 | 2/09 | 2/10 | 2/11 |
| SR0W | 00003A | MC | 2/12 | 2/13 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 |
| | | | 2/28 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| VERIF | 00009D | MC | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 | 3/08 |
| | | | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 | | |
| | | | 1/14 | 1/24 | 1/44 | 1/54 | 2/14 | 2/24 | 2/44 |
| | | | 2/54 | 3/14 | | | | | |
| | | | 1/06 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 | 1/23 |
| | | | | | | | | | |

| | | | | | | | | |
|-------|-----------|------|------|------|------|------|------|------|
| | | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 | 1/38 | 1/39 |
| | | 1/40 | 1/41 | 1/42 | 1/43 | 1/53 | 1/54 | 1/55 |
| | | 1/56 | 1/57 | 1/58 | 2/08 | 2/09 | 2/10 | 2/11 |
| | | 2/12 | 2/13 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 |
| | | 2/28 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| | | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 | 3/08 |
| | | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 | | |
| W4A | 0000FC MC | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 | 1/23 |
| | | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 | 1/38 | 1/39 |
| | | 1/40 | 1/41 | 1/42 | 1/43 | 1/53 | 1/54 | 1/55 |
| | | 1/56 | 1/57 | 1/58 | 2/08 | 2/09 | 2/10 | 2/11 |
| | | 2/12 | 2/13 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 |
| | | 2/28 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| | | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 | 3/08 |
| | | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 | | |
| WD.0 | 003000 | 1/07 | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 |
| | | 1/14 | 1/22 | 1/23 | 1/24 | 1/25 | 1/26 | 1/27 |
| | | 1/28 | 1/29 | 1/37 | 1/38 | 1/39 | 1/40 | 1/41 |
| | | 1/42 | 1/43 | 1/44 | 1/52 | 1/53 | 1/54 | 1/55 |
| | | 1/56 | 1/57 | 1/58 | 1/59 | 2/07 | 2/08 | 2/09 |
| | | 2/10 | 2/11 | 2/12 | 2/13 | 2/14 | 2/22 | 2/23 |
| | | 2/24 | 2/25 | 2/26 | 2/27 | 2/28 | 2/29 | 2/37 |
| | | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 | 2/44 |
| | | 2/52 | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 |
| | | 2/59 | 3/07 | 3/08 | 3/09 | 3/10 | 3/11 | 3/12 |
| | | 3/13 | 3/14 | | | | | |
| WD.1 | 00400C | 1/07 | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 |
| | | 1/15 | 1/22 | 1/23 | 1/24 | 1/25 | 1/26 | 1/27 |
| | | 1/28 | 1/30 | 1/37 | 1/38 | 1/39 | 1/40 | 1/41 |
| | | 1/42 | 1/43 | 1/45 | 1/52 | 1/53 | 1/54 | 1/55 |
| | | 1/56 | 1/57 | 1/58 | 1/60 | 2/07 | 2/08 | 2/09 |
| | | 2/10 | 2/11 | 2/12 | 2/13 | 2/15 | 2/22 | 2/23 |
| | | 2/24 | 2/25 | 2/26 | 2/27 | 2/28 | 2/30 | 2/37 |
| | | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 | 2/45 |
| | | 2/52 | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 |
| | | 2/60 | 3/07 | 3/08 | 3/09 | 3/10 | 3/11 | 3/12 |
| | | 3/13 | 3/15 | | | | | |
| WD.10 | 000000 | 1/07 | 1/20 | 1/22 | 1/35 | 1/37 | 1/50 | 1/52 |
| | | 2/05 | 2/07 | 2/20 | 2/22 | 2/35 | 2/37 | 2/50 |
| | | 2/52 | 3/05 | 3/07 | 3/20 | | | |
| WD.2 | 000009 | 1/07 | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 |
| | | 1/16 | 1/22 | 1/23 | 1/24 | 1/25 | 1/26 | 1/27 |
| | | 1/28 | 1/31 | 1/37 | 1/38 | 1/39 | 1/40 | 1/41 |
| | | 1/42 | 1/43 | 1/46 | 1/52 | 1/53 | 1/54 | 1/55 |
| | | 1/56 | 1/57 | 1/58 | 2/01 | 2/07 | 2/08 | 2/09 |
| | | 2/10 | 2/11 | 2/12 | 2/13 | 2/16 | 2/22 | 2/23 |
| | | 2/24 | 2/25 | 2/26 | 2/27 | 2/28 | 2/31 | 2/37 |
| | | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 | 2/46 |
| | | 2/52 | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 |
| | | 3/01 | 3/07 | 3/08 | 3/09 | 3/10 | 3/11 | 3/12 |
| | | 3/13 | 3/16 | | | | | |
| WD.3 | 0043FF | 1/07 | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 |
| | | 1/17 | 1/22 | 1/23 | 1/24 | 1/25 | 1/26 | 1/27 |
| | | 1/28 | 1/32 | 1/37 | 1/38 | 1/39 | 1/40 | 1/41 |
| | | 1/42 | 1/43 | 1/47 | 1/52 | 1/53 | 1/54 | 1/55 |
| | | 1/56 | 1/57 | 1/58 | 2/02 | 2/07 | 2/08 | 2/09 |
| | | 2/10 | 2/11 | 2/12 | 2/13 | 2/17 | 2/22 | 2/23 |
| | | 2/24 | 2/25 | 2/26 | 2/27 | 2/28 | 2/32 | 2/37 |

| | | | | | | | | |
|------|--------|------|------|------|------|------|------|------|
| | | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 | 2/47 |
| | | 2/52 | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 |
| | | 3/02 | 3/07 | 3/08 | 3/09 | 3/10 | 3/11 | 3/12 |
| | | 3/13 | 3/17 | | | | | |
| WD.4 | 000000 | 1/07 | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 |
| | | 1/18 | 1/22 | 1/23 | 1/24 | 1/25 | 1/26 | 1/27 |
| | | 1/28 | 1/33 | 1/37 | 1/38 | 1/39 | 1/40 | 1/41 |
| | | 1/42 | 1/43 | 1/48 | 1/52 | 1/53 | 1/54 | 1/55 |
| | | 1/56 | 1/57 | 1/58 | 2/03 | 2/07 | 2/08 | 2/09 |
| | | 2/10 | 2/11 | 2/12 | 2/13 | 2/18 | 2/22 | 2/23 |
| | | 2/24 | 2/25 | 2/26 | 2/27 | 2/28 | 2/33 | 2/37 |
| | | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 | 2/48 |
| | | 2/52 | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 |
| | | 3/03 | 3/07 | 3/08 | 3/09 | 3/10 | 3/11 | 3/12 |
| | | 3/13 | 3/18 | | | | | |
| WD.5 | 00400C | 1/07 | 1/12 | 1/18 | 1/22 | 1/27 | 1/33 | 1/37 |
| | | 1/42 | 1/48 | 1/52 | 1/57 | 2/03 | 2/07 | 2/12 |
| | | 2/18 | 2/22 | 2/27 | 2/33 | 2/37 | 2/42 | 2/48 |
| | | 2/52 | 2/57 | 3/03 | 3/07 | 3/12 | 3/18 | |
| WD.6 | 00F000 | 1/07 | 1/13 | 1/19 | 1/22 | 1/28 | 1/34 | 1/37 |
| | | 1/43 | 1/49 | 1/52 | 1/58 | 2/04 | 2/07 | 2/13 |
| | | 2/19 | 2/22 | 2/28 | 2/34 | 2/37 | 2/43 | 2/49 |
| | | 2/52 | 2/58 | 3/04 | 3/07 | 3/13 | 3/19 | |
| WD.7 | 000000 | 1/07 | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 |
| | | 1/20 | 1/22 | 1/23 | 1/24 | 1/25 | 1/26 | 1/27 |
| | | 1/28 | 1/33 | 1/37 | 1/38 | 1/39 | 1/40 | 1/41 |
| | | 1/42 | 1/43 | 1/50 | 1/52 | 1/53 | 1/54 | 1/55 |
| | | 1/56 | 1/57 | 1/58 | 2/03 | 2/07 | 2/08 | 2/09 |
| | | 2/10 | 2/11 | 2/12 | 2/13 | 2/20 | 2/22 | 2/23 |
| | | 2/24 | 2/25 | 2/26 | 2/27 | 2/28 | 2/33 | 2/37 |
| | | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 | 2/50 |
| | | 2/52 | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 |
| | | 3/03 | 3/07 | 3/08 | 3/09 | 3/10 | 3/11 | 3/12 |
| | | 3/13 | 3/20 | | | | | |
| WD.8 | 000000 | 1/07 | 1/20 | 1/22 | 1/33 | 1/37 | 1/50 | 1/52 |
| | | 2/03 | 2/07 | 2/20 | 2/22 | 2/33 | 2/37 | 2/50 |
| | | 2/52 | 3/03 | 3/07 | 3/20 | | | |
| WD.9 | 000000 | 1/07 | 1/20 | 1/22 | 1/33 | 1/37 | 1/50 | 1/52 |
| | | 2/03 | 2/07 | 2/20 | 2/22 | 2/33 | 2/37 | 2/50 |
| | | 2/52 | 3/03 | 3/07 | 3/20 | | | |
| 21 | 00000C | 1/07 | 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 |
| | | 1/14 | 1/15 | 1/16 | 1/17 | 1/18 | 1/19 | 1/20 |
| | | 1/22 | 1/23 | 1/24 | 1/25 | 1/26 | 1/27 | 1/28 |
| | | 1/29 | 1/30 | 1/31 | 1/32 | 1/33 | 1/34 | 1/35 |
| | | 1/37 | 1/33 | 1/39 | 1/40 | 1/41 | 1/42 | 1/43 |
| | | 1/44 | 1/45 | 1/46 | 1/47 | 1/48 | 1/49 | 1/50 |
| | | 1/52 | 1/53 | 1/54 | 1/55 | 1/56 | 1/57 | 1/58 |
| | | 1/59 | 1/60 | 2/01 | 2/02 | 2/03 | 2/04 | 2/05 |
| | | 2/07 | 2/08 | 2/09 | 2/10 | 2/11 | 2/12 | 2/13 |
| | | 2/14 | 2/15 | 2/16 | 2/17 | 2/18 | 2/19 | 2/20 |
| | | 2/22 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 | 2/28 |
| | | 2/29 | 2/30 | 2/31 | 2/32 | 2/33 | 2/34 | 2/35 |
| | | 2/37 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| | | 2/44 | 2/45 | 2/46 | 2/47 | 2/48 | 2/49 | 2/50 |
| | | 2/52 | 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 |
| | | 2/59 | 2/60 | 3/01 | 3/02 | 3/03 | 3/04 | 3/05 |
| | | 3/07 | 3/08 | 3/09 | 3/10 | 3/11 | 3/12 | 3/13 |
| | | 3/14 | 3/15 | 3/16 | 3/17 | 3/18 | 3/19 | 3/20 |

7J 00000C

| | | | | | | |
|------|------|------|------|------|------|------|
| 1/08 | 1/09 | 1/10 | 1/11 | 1/12 | 1/13 | 1/23 |
| 1/24 | 1/25 | 1/26 | 1/27 | 1/28 | 1/38 | 1/39 |
| 1/40 | 1/41 | 1/42 | 1/43 | 1/53 | 1/54 | 1/55 |
| 1/56 | 1/57 | 1/58 | 2/08 | 2/09 | 2/10 | 2/11 |
| 2/12 | 2/13 | 2/23 | 2/24 | 2/25 | 2/26 | 2/27 |
| 2/28 | 2/38 | 2/39 | 2/40 | 2/41 | 2/42 | 2/43 |
| 2/53 | 2/54 | 2/55 | 2/56 | 2/57 | 2/58 | 3/08 |
| 3/09 | 3/10 | 3/11 | 3/12 | 3/13 | | |

Scant type, low ill rate, . . .

| GRP | TRUNKS | ODA.GT | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14, 15, 16 | Σ L.S.GT |
|-----|------------|--------|---|---|---|---|---|---|---|---|---|----|----|----|----|------------|-----------------|
| 1 | 27 | φ 11 | 1 | | | | | | | | | | 1 | | | | φ 4000 0020 |
| 2 | 26 | 2 11 | 1 | | | | | | | | | | | | | | 2 4000 0040 |
| 3 | 1 | 4 11 | | | | | | | | | | 1 | | | | | 4 8000 8000 |
| 4 | 26 | -3 11 | 1 | | | | | | | | | | | | | | 6 4000 0010 |
| 5 | 28, 29, 30 | 6 11 | 1 | | | | | | | | | | | | | | 8 8000 1800 |
| 6 | 4, 5 | 8 11 | 1 | | | | | | | | | | | | | | 10 4000 0008 |
| 7 | 29 | 10 11 | | | | | | | | | | | | 1 | 1 | 1 | 12 8000 E000 |
| 8 | 1, 2, 3 | 12 11 | 1 | | | | | | | | | | | | | | 14 8000 0800 |
| 9 | 5 | 14 11 | | | | 1 | 1 | | | | | | | | | | |
| | | | 1 | | | | | | | | | | | | | | |
| | | | 1 | | | | | | | | | | | | | | |
| | | | 1 | 1 | 1 | | | | | | | | | | | | |
| | | | 1 | | | | | | | | | | | | | | |

NGRPS = 9

ODA.ST

φ x x x
1 1
2 3
3 6
4 8
5 10
6 10
· ·
· ·
· ·
15 10

| | | | |
|----|--------|-------|--------|
| 01 | | .NREL | |
| 02 | | .ENI | ZLS.GI |
| 03 | 000012 | .RDX | 10 |
| 04 | 0010 | .RDXU | 16 |

05

06

07

08

ZLS.GI:

;**** KWC/BV ZONE LISTS ****

09

10

ZONE 1

11

LIST 27

12

ZEND 1

13 00000' 4000

KW

14 00001' 0020

WD.1

15

16

ZONE 2

17

LIST 26

18

ZEND 2

19 00002' 4000

KW

20 00003' 0040

WD.1

21

22

ZONE 3

23

LIST 1

24

ZEND 3

25 00004' 8000

KW

26 00005' 8000

WD.0

27

28

ZONE 4

29

DUPL 2

30

ZEND 4

31

32

ZONE 5

33

LIST 28 29 30

34

ZEND 5

35 00006' 4000

KW

36 00007' 0010

WD.1

37

38

ZONE 6

39

LIST 4 5

40

ZEND 6

41 00008' 8000

KW

42 00009' 1800

WD.0

43

44

ZONE 7

45

LIST 29

46

ZEND 7

47 0000A' 4000

KW

48 0000B' 0008

WD.1

49

50

ZONE 8

51

LIST 1 2 3

52

ZEND 8

53 0000C' 8000

KW

54 0000D' 8000

WD.0

55

56

ZONE 9

57

LIST 5

58

ZEND 9

59 0000E' 6000

KW

60 0000F' 0600

WD.0


```

0002 .MAIN
01
02
03
04
05
06 00010' 0009 ODA.GI: ZCI ;**** OUTER-DIRECTORY ADDRESSES ****
07
08
09 ZONE 1
10 LIST 27
11 ZEND 1
12 00011' 0000 DISPL
13
14 ZONE 2
15 LIST 26
16 ZEND 2
17 00012' 0004 DISPL
18
19 ZONE 3
20 LIST 1
21 ZEND 3
22 00013' 0008 DISPL
23
24 ZONE 4
25 DUPL 2
26 ZEND 4
27 00014' FFFA DISPL
28
29 ZONE 5
30 LIST 28 29 30
31 ZEND 5
32 00015' 000C DISPL
33
34 ZONE 6
35 LIST 4 5
36 ZEND 6
37 00016' 0010 DISPL
38
39 ZONE 7
40 LIST 29
41 ZEND 7
42 00017' 0014 DISPL
43
44 ZONE 8
45 LIST 1 2 3
46 ZEND 8
47 00018' 0018 DISPL
48
49 ZONE 9
50 LIST 5
51 ZEND 9
52 00019' 001C DISPL
53
54
55 .END ZLS.GI

```

0005 .MAIN

| | | | | | | | | | |
|-------|--------|----|------|------|------|------|------|------|------|
| BASE | 000000 | | 1/09 | 1/15 | 1/21 | 1/27 | 1/30 | 1/31 | 1/37 |
| | | | 1/43 | 1/49 | 1/55 | 2/01 | 2/03 | 2/12 | 2/17 |
| | | | 2/22 | 2/26 | 2/27 | 2/32 | 2/37 | 2/42 | 2/47 |
| | | | 2/52 | | | | | | |
| BIT | 000800 | | 1/12 | 1/18 | 1/24 | 1/34 | 1/40 | 1/46 | 1/52 |
| | | | 1/58 | 2/11 | 2/16 | 2/21 | 2/31 | 2/36 | 2/41 |
| | | | 2/46 | 2/51 | | | | | |
| CLEAR | 000007 | MC | 1/09 | 2/03 | | | | | |
| DISPL | 00001C | | 1/15 | 1/21 | 1/27 | 1/30 | 1/31 | 1/37 | 1/43 |
| | | | 1/49 | 1/55 | 2/01 | 2/12 | 2/17 | 2/22 | 2/26 |
| | | | 2/27 | 2/32 | 2/37 | 2/42 | 2/47 | 2/52 | |
| DUPL | 0001C7 | MC | 1/29 | 2/25 | | | | | |
| EMPTY | 00FFFF | | 1/09 | 1/15 | 1/21 | 1/27 | 1/31 | 1/37 | 1/43 |
| | | | 1/49 | 1/55 | 2/01 | 2/08 | 2/12 | 2/17 | 2/22 |
| | | | 2/27 | 2/32 | 2/37 | 2/42 | 2/47 | 2/52 | |
| FL001 | 000001 | | 1/11 | 1/15 | 1/15 | 2/10 | 2/12 | | |
| FL002 | 000001 | | 1/17 | 1/19 | 1/21 | 2/15 | 2/17 | | |
| FL003 | 000001 | | 1/23 | 1/25 | 1/27 | 2/20 | 2/22 | | |
| FL004 | 000002 | | 1/29 | 1/30 | 1/31 | 2/25 | 2/26 | 2/27 | |
| FL005 | 000001 | | 1/33 | 1/35 | 1/37 | 2/30 | 2/32 | | |
| FL006 | 000001 | | 1/39 | 1/41 | 1/43 | 2/35 | 2/37 | | |
| FL007 | 000001 | | 1/45 | 1/47 | 1/49 | 2/40 | 2/42 | | |
| FL008 | 000001 | | 1/51 | 1/53 | 1/55 | 2/45 | 2/47 | | |
| FL009 | 000001 | | 1/57 | 1/59 | 2/01 | 2/50 | 2/52 | | |
| KW | 000000 | | 1/09 | 1/12 | 1/13 | 1/14 | 1/18 | 1/19 | 1/20 |
| | | | 1/24 | 1/25 | 1/26 | 1/31 | 1/34 | 1/35 | 1/36 |
| | | | 1/40 | 1/41 | 1/42 | 1/46 | 1/47 | 1/48 | 1/52 |
| | | | 1/53 | 1/54 | 1/58 | 1/59 | 1/60 | 2/03 | 2/11 |
| | | | 2/12 | 2/16 | 2/17 | 2/21 | 2/22 | 2/27 | 2/31 |
| | | | 2/32 | 2/36 | 2/37 | 2/41 | 2/42 | 2/46 | 2/47 |
| | | | 2/51 | 2/52 | | | | | |
| LIST | 0001A9 | MC | 1/11 | 1/17 | 1/23 | 1/33 | 1/39 | 1/45 | 1/51 |
| | | | 1/57 | 2/10 | 2/15 | 2/20 | 2/30 | 2/35 | 2/40 |
| | | | 2/45 | 2/50 | | | | | |
| NOI.0 | 000104 | MC | 1/13 | 1/19 | 1/25 | 1/31 | 1/35 | 1/41 | 1/47 |
| | | | 1/53 | 1/59 | 2/12 | 2/17 | 2/22 | 2/27 | 2/32 |
| | | | 2/37 | 2/42 | 2/47 | 2/52 | | | |
| ODA.6 | 000010 | | 1/09 | 2/04 | 2/06 | | | | |
| SET | 00016C | MC | 1/12 | 1/18 | 1/24 | 1/34 | 1/40 | 1/46 | 1/52 |
| | | | 1/56 | 2/11 | 2/16 | 2/21 | 2/31 | 2/36 | 2/41 |
| | | | 2/46 | 2/51 | | | | | |
| TRUNK | 000004 | | 1/12 | 1/18 | 1/24 | 1/34 | 1/40 | 1/46 | 1/52 |
| | | | 1/58 | 2/11 | 2/16 | 2/21 | 2/31 | 2/36 | 2/41 |
| | | | 2/46 | 2/51 | | | | | |
| TYPE | 00016F | MC | 1/07 | 2/02 | | | | | |
| WD.0 | 000000 | | 1/09 | 1/12 | 1/14 | 1/18 | 1/20 | 1/24 | 1/26 |
| | | | 1/27 | 1/34 | 1/36 | 1/40 | 1/42 | 1/43 | 1/46 |
| | | | 1/48 | 1/52 | 1/54 | 1/55 | 1/58 | 1/60 | 2/01 |
| WD.1 | 000000 | | 1/09 | 1/12 | 1/14 | 1/15 | 1/18 | 1/20 | 1/21 |
| | | | 1/24 | 1/27 | 1/34 | 1/36 | 1/37 | 1/40 | 1/43 |
| | | | 1/46 | 1/48 | 1/49 | 1/52 | 1/55 | 1/58 | 2/01 |
| WD.2 | 000000 | | 1/09 | 1/12 | 1/15 | 1/18 | 1/21 | 1/24 | 1/27 |
| | | | 1/34 | 1/37 | 1/40 | 1/43 | 1/46 | 1/49 | 1/52 |
| | | | 1/55 | 1/56 | 2/01 | | | | |
| WD.3 | 000000 | | 1/09 | 1/12 | 1/15 | 1/18 | 1/21 | 1/24 | 1/27 |
| | | | 1/34 | 1/37 | 1/40 | 1/43 | 1/46 | 1/49 | 1/52 |
| | | | 1/55 | 1/58 | 2/01 | | | | |
| WD.4 | 000000 | | 1/09 | 1/12 | 1/15 | 1/18 | 1/21 | 1/24 | 1/27 |
| | | | 1/34 | 1/37 | 1/40 | 1/43 | 1/46 | 1/49 | 1/52 |

| | | | | | | | | |
|-------|------------|------|------|------|------|------|------|------|
| WD.5 | 000000 | 1/55 | 1/58 | 2/01 | | | | |
| | | 1/09 | 1/12 | 1/15 | 1/18 | 1/21 | 1/24 | 1/27 |
| | | 1/34 | 1/37 | 1/40 | 1/43 | 1/46 | 1/49 | 1/52 |
| | | 1/55 | 1/58 | 2/01 | | | | |
| WD.6 | 000000 | 1/09 | 1/12 | 1/15 | 1/18 | 1/21 | 1/24 | 1/27 |
| | | 1/34 | 1/37 | 1/40 | 1/43 | 1/46 | 1/49 | 1/52 |
| | | 1/55 | 1/58 | 2/01 | | | | |
| WD.7 | 000000 | 1/09 | 1/12 | 1/15 | 1/18 | 1/21 | 1/24 | 1/27 |
| | | 1/34 | 1/37 | 1/40 | 1/43 | 1/46 | 1/49 | 1/52 |
| | | 1/55 | 1/58 | 2/01 | | | | |
| WD.8 | 000000 | 1/09 | 1/12 | 1/15 | 1/18 | 1/21 | 1/24 | 1/27 |
| | | 1/34 | 1/37 | 1/40 | 1/43 | 1/46 | 1/49 | 1/52 |
| | | 1/55 | 1/58 | 2/01 | | | | |
| WD.9 | 000000 | 1/09 | 1/12 | 1/15 | 1/18 | 1/21 | 1/24 | 1/27 |
| | | 1/34 | 1/37 | 1/40 | 1/43 | 1/46 | 1/49 | 1/52 |
| | | 1/55 | 1/58 | 2/01 | | | | |
| WORD | 000000 | 1/12 | 1/18 | 1/24 | 1/34 | 1/40 | 1/46 | 1/52 |
| | | 1/58 | 2/11 | 2/16 | 2/21 | 2/31 | 2/36 | 2/41 |
| | | 2/46 | 2/51 | | | | | |
| ZCI | 000009 | 1/09 | 1/11 | 1/13 | 1/15 | 1/17 | 1/19 | 1/21 |
| | | 1/23 | 1/25 | 1/27 | 1/29 | 1/30 | 1/31 | 1/33 |
| | | 1/35 | 1/37 | 1/39 | 1/41 | 1/43 | 1/45 | 1/47 |
| | | 1/49 | 1/51 | 1/53 | 1/55 | 1/57 | 1/59 | 2/01 |
| | | 2/05 | 2/06 | 2/08 | 2/10 | 2/12 | 2/15 | 2/17 |
| | | 2/20 | 2/22 | 2/25 | 2/26 | 2/27 | 2/30 | 2/32 |
| | | 2/35 | 2/37 | 2/40 | 2/42 | 2/45 | 2/47 | 2/50 |
| | | 2/52 | | | | | | |
| ZEND | 0001E5 MC | 1/12 | 1/18 | 1/24 | 1/30 | 1/34 | 1/40 | 1/46 |
| | | 1/52 | 1/58 | 2/11 | 2/16 | 2/21 | 2/26 | 2/31 |
| | | 2/36 | 2/41 | 2/46 | 2/51 | | | |
| ZLS.6 | 000000' EN | 1/02 | 1/08 | 2/03 | 2/55 | | | |
| ZN.1 | 000000' | 1/11 | 1/15 | 2/10 | 2/12 | | | |
| ZN.2 | 000002' | 1/17 | 1/21 | 1/30 | 2/15 | 2/17 | 2/26 | |
| ZN.3 | 000004' | 1/23 | 1/27 | 2/20 | 2/22 | | | |
| ZN.4 | 000006' | 1/29 | 1/31 | 2/25 | 2/27 | | | |
| ZN.5 | 000006' | 1/33 | 1/37 | 2/30 | 2/32 | | | |
| ZN.6 | 000008' | 1/39 | 1/43 | 2/35 | 2/37 | | | |
| ZN.7 | 00000A' | 1/45 | 1/49 | 2/40 | 2/42 | | | |
| ZN.8 | 00000C' | 1/51 | 1/55 | 2/45 | 2/47 | | | |
| ZN.9 | 00000E' | 1/57 | 2/01 | 2/50 | 2/52 | | | |
| ZONE | 00019C MC | 1/10 | 1/16 | 1/22 | 1/28 | 1/32 | 1/38 | 1/44 |
| | | 1/50 | 1/56 | 2/09 | 2/14 | 2/19 | 2/24 | 2/29 |
| | | 2/34 | 2/39 | 2/44 | 2/49 | | | |
| PI | 000001 | 1/09 | 1/12 | 1/14 | 1/15 | 1/18 | 1/20 | 1/21 |
| | | 1/24 | 1/26 | 1/27 | 1/34 | 1/36 | 1/37 | 1/40 |
| | | 1/42 | 1/45 | 1/46 | 1/48 | 1/49 | 1/52 | 1/54 |
| | | 1/55 | 1/58 | 1/60 | 2/01 | 2/11 | 2/16 | 2/21 |
| | | 2/31 | 2/36 | 2/41 | 2/46 | 2/51 | | |
| PJ | 00000B | 1/12 | 1/18 | 1/24 | 1/34 | 1/40 | 1/46 | 1/52 |
| | | 1/58 | | | | | | |
| PK | 000004 | 1/06 | 1/08 | 1/09 | 1/11 | 1/12 | 1/13 | 1/15 |
| | | 1/17 | 1/18 | 1/19 | 1/21 | 1/23 | 1/24 | 1/25 |
| | | 1/27 | 1/29 | 1/30 | 1/31 | 1/33 | 1/34 | 1/35 |
| | | 1/37 | 1/39 | 1/40 | 1/41 | 1/43 | 1/45 | 1/46 |
| | | 1/47 | 1/49 | 1/51 | 1/52 | 1/53 | 1/55 | 1/57 |
| | | 1/58 | 1/59 | 2/01 | 2/02 | 2/03 | 2/04 | 2/05 |
| | | 2/06 | 2/10 | 2/11 | 2/12 | 2/15 | 2/16 | 2/17 |
| | | 2/20 | 2/21 | 2/22 | 2/25 | 2/26 | 2/27 | 2/30 |

0005 .MAIN

| | | | | | | |
|------|------|------|------|------|------|------|
| 2/31 | 2/32 | 2/33 | 2/36 | 2/37 | 2/40 | 2/41 |
| 2/42 | 2/45 | 2/46 | 2/47 | 2/50 | 2/51 | 2/52 |
| 2/54 | | | | | | |

TITLE DUMOR -- DUMMY DRIVER FOR LIBRARY GENERATION TEST

X'1000' PBLDR CAN NOT GENERATE SAVE
 FILES BELOW 420 OCTAL

1
 2
 3 1000 LUC
 4
 5
 6 1000 B04C JSB,A P,IND ?
 7 1001-1002 PARITY ?
 8
 9 PURGE
 10 EOF PARITY

```

11  TITLE: PARITY -- PARITY OR BIT COUNT GENERATOR
12
13  ENTRY : PARITY
14
15  INPUTS : ONE ARGUMENT IN A-REG = WORD AMUSE UNES-BITS ARE TO BE COUNTED
16
17  ACTIONS: THIS ALGORITHM IS BASED ON THE FACT THAT FOR ANY NON-ZERO BINARY
18            NUMBER Q REPRESENTED IN A FINITE-LENGTH REGISTER, THE TRANSFORM
19            1 = G.AND.(Q-1) HAS ONE FEWER UNES-BITS THAN Q
20
21            1 - Q = 0 ? YES: RETURN//NO : STEP 2
22            2 - CNT <-- 0
23            3 - Q <-- G.AND.(Q-1)
24            4 - CNT <-- CNT+1
25            5 - Q = 0 ? YES: RETURN//NO : STEP 3
26
27  OUTPUTS: BIT COUNT (CNT) RETURNED IN A-REG, OTHER REG'S UNCHANGED
28
29  GLOBAL : NONE
30
31  REF'S :
32
33  SIZING : MODULE LENGTHS SHOWN BY NEXT THREE EQUATES
34
35      CODE= LASCOD-S
36      DATA= LASUA-LASCD
37      TOTAL= CODE+DATA
38
39  STACK : MAXIMUM STACK DEPTH INCL RETURN ADDRESS = 5
40
41  AUTHOR : S.J.WEISSAN      RAYTHEON CO., ESU      DEPT. 9283
42
43  DATE : 1976 SEPT 10      SANTA BARBARA, CA
44
45  EJECT

```


TITLE: ELI -- EMITTER LIBRARY 1

EMITTERS: UDV.F, UDA.F, ZLS.F,
UDV.PI, UDA.PI, ZLS.PI
UDA.PI, ZLS.PI

INPUTS: NONE. THIS IS A SET OF STATIC TABLES THAT EXISTS FROM THE
BEGINNING OF THE PROGRAM AND IS NOT ALTERED DYNAMICALLY.

ACTIONS: CONTAINS NO EXECUTABLE CODE.
STORAGE DEFINITION ONLY.

OUTPUTS: NONE

GLOBAL: NONE

REFR'S:

SIZING: MODULE LENGTHS SHOWN BY NEXT THREE EQUATES

CODE= LASCU-S
DATA= LASCU-LASCU
TOTAL= CODE+DATA

STACK: MAXIMUM STACK DEPTH INCL RETURN ADDRESS = 0

AUTHOR: S.J.WERSAN RAYTHEON CO., ESD DEPT. 9285

DATE: 1976 DEC 27 SANIA BARBARA, CA

HISTORY: REPLACES ADM LIBRARY VERSION OF OCT 1

1010 LASCU= S

EJECT


```

134 TITLE L1BLINK -- TABLES THAT LINK ELI TO EL2
135
136 ENTRIES: OUA.GI & ZLS.GI
137
138 INPUTS : NONE. THIS IS A SET OF STATIC TABLES THAT EXISTS FROM THE
139 BEGINNING OF THE PROGRAM AND IS NOT ALTERED DYNAMICALLY.
140
141 ACTIONS: CONTAINS NO EXECUTABLE CODE.
142 STORAGE DEFINITION ONLY.
143
144 OUTPUTS: NONE
145
146 GLOBAL : NONE
147 REPR'S :
148
149 SIZING : MODULE LENGTHS SHOWN BY NEXT THREE EQUATES
150
151 CODE= LASC0=$
152 DATA= LAS0A=LASC0
153 TOTAL= CODE+DATA
154
155 STACK : MAXIMUM STACK DEPTH INCL RETURN ADDRESS = 0
156
157 AUTHOR : S.J.WEISMAN -RAYTHEON CO., ESD - DEPT. 9285
158
159 DATE : 1976 DEC 27 SANTA BARBARA, CA
160
161 1004 LASC0= $
162
163 *****
164
165 KWC/BV TRUNK LISTS FOR EACH GROUP
166
167 ZLS.GI: RES 16 LENGTH IS FOR TRAIL LIBRARY 1
168
169 GROUP/TRUNK OUTER DIRECTORY
170
171 0009 NGRP= 9 NUMBER OF GROUPS
172
173 10E4 0009 OUA.GI: RES NGRP FIRST WORD CONTAINS LENGTH OF LIST TO FOLLOW
174 10E5 RES NGRP RESERVE THE SPACE
175
176 10EE LAS0A= $
177
178 EOF ANEC2

```

```

ANEC2 -- EMITTER CLASSIFICATION PROC.#2 - ANALYSIS WITH SUBM 12/20/76 14:50: 4 PAGE /
TITLE ANEC2 -- EMITTER CLASSIFICATION PROC.#2 - ANALYSIS WITH SUBROUTINE
179 ENTRY : ANEC2
180
181 INPUTS : X-REG --> 1-ST WORD OF 3-WORD BLOCK
182
183
184
185
186
187
188
189
190
191
192
193
194
195
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197
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199
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224
225
226
227

```

WORD 1: <--ANEC2--> ANEC2 = AN-REF MODULE CODE
 WORD 2: <-----CLAD-----> EFW = EMITTER TRACK FILE #
 WORD 3: <ST> <--SPU-----> CLAD = CANU-LIST ADDR
 ST = SCAN TYPE FROM LAST ANALYSIS
 SPU = " PERIOD "

ACTION : CALL ANST2 TO PERFORM SCAN TEST 2.
 PERFORM LEVEL 2 SEARCH (ANLV2): IF NO CANDIDATES ARE LEFT ON
 CANU-LIST EXIT IMMEDIATELY TO CALL+2 W/O MESSAGE SENT,
 ELSE PERFORM A NEW EMITTER LINK ANALYSIS #1 (ANEL1).
 IF CONTEMPORANEOUS ANALYSIS IS (IS NOT) REQUIRED, ANEL1
 RETURNS TO CALL+2 (CALL+1) SETTING (RESETTING) THE ANALYSIS-
 WANTED BIT OF THE CONTEMPORANEOUS ANALYSIS REQUEST MESSAGE (CRUMSG).

OUTPUTS: EIP VARIABLES ALTERED BY CITED SUBROUTINES.
 IF NO CANDIDATES LEFT RETURN TO CALL+2, ELSE
 RETURN TO CALL+1 WITH X-REG --> CRUMSG

GLOBAL : 1. TABLES -- ONLY WITHIN DEPENDENT SUBROUTINES
 REF'S : 2. SUBROUTINES -- ANST2 ?SCAN TEST 2
 ANLV2 ?LEVEL 2 SEARCH
 ANEL1 ?NEW EMITTER LINK ANALYSIS #1

3. PARAMETERS --
 ERMCAQ= 1 ?EXEC MSG # FOR CONTEMP-ANA-NEW
 RMCECS= 9 ?RETURN MODULE CODE FOR ECS

SIZING : MODULE LENGTHS SHOWN BY NEXT THREE EQUATES
 CODE= LASCU=5
 DATA= LASDA-LASCU
 TOTAL= CODE+DATA

STACK : MAXIMUM STACK DEPTH INCL RETURN ADDRESS = 3
 AUTHOR : S.J.WEKSAN KAYHEON CO., ESO DEPT. 9283
 DATE : 1976 OCT 2 SANTA BARBARA, CA

EJECT

CROSS-REFERENCE TABLE FOR LOCAL SYMBOLS -- BEGINNING WITH LINE # 10

| SYMBOL | VALUE | TYPE | LINE | NUMBERS | LINE | NUMBERS |
|--------|-------|------|------|---------|------|---------|
| CODE | 0000 | = | 55 | 57 | | |
| DATA | 0000 | = | 56 | 57 | | |
| DONE | 100F | : | 48 | 64 | | |
| LASCO | 1010 | = | 35 | 56 | 66 | |
| LASOA | 1010 | = | 56 | 67 | | |
| PL00P | 1006 | : | 55 | 59 | | |
| TOTAL | 0000 | = | 57 | | | |

CROSS-REFERENCE TABLE FOR LOCAL SYMBOLS -- BEGINNING WITH LINE # 70

| SYMBOL | VALUE | TYPE | LINE | NUMBERS | LINE | NUMBERS |
|--------|-------|------|------|--------------------------------|------|---------|
| CODE | FFE6 | = | 90 | 92 151 153 217 219 | | |
| CRCLAD | 110E | : | 255 | 275 | | |
| CRJRSB | 110H | : | 259 | 272 | | |
| CRRENW | 110P | : | 257 | 276 | | |
| CRHNCO | 110D | : | 246 | 274 | | |
| DATA | 001A | = | 91 | 92 152 153 218 219 | | |
| DOONE | 1107 | : | 259 | 262 | | |
| EMNCAU | 0001 | = | 212 | 272 | | |
| LASCU | 110B | = | 90 | 91 102 151 152 161 217 218 268 | | |
| LASDA | 1110 | = | 91 | 151 152 176 218 279 | | |
| NFRQ | 0015 | = | 107 | 110 112 113 | | |
| NGRP | 0009 | = | 171 | 173 174 | | |
| NPRI | 0015 | = | 117 | 120 122 123 | | |
| RMCECS | 0009 | = | 213 | 245 | | |
| TOTAL | 0000 | = | 92 | 153 219 | | |

CROSS-REFERENCE TABLE FOR GLOBAL SYMBOLS

| SYMBOL | VALUE | TYPE | LINE | NUMBERS | LINE | NUMBERS |
|--------|-------|------|------|---------|------|---------|
| ANEC2 | 1022 | : | 230 | | | |
| ODA.F | 1022 | : | 110 | | | |
| ODA.GT | 1024 | : | 173 | | | |
| ODA.PI | 1079 | : | 120 | | | |
| ODA.PW | 1004 | : | 129 | | | |
| ODV.F | 1041 | : | 112 | | | |
| ODV.PI | 1080 | : | 122 | | | |
| PARITY | 1002 | : | 7 | 48 | | |
| ZLS.F | 1010 | : | 109 | | | |
| ZLS.GT | 1004 | : | 167 | | | |
| ZLS.PI | 1055 | : | 119 | | | |
| ZLS.PW | 1040 | : | 127 | | | |

PRINT LIBP11.JOB
 HLDR/2 10125/N LIBP11 X/LPMAF/D X
 MKANS/2 10125/P 10237/L LIBP11.SV LIBP11.AN
 PLUOK/H LIBP11.AB

LIBP11.SV LOADED BY HLDR MEV 03.01 AT 16:03:03 12/26/70

.MAIN IMIN

INMAX 010335 ZMAX 000050 CSZE 0000000 ESI 0000000 SSI 0000000
 USIAD 000400 ZLS.P 010125 IMIN 010241

| LIBP11.AB | DATA | 16: 3:26 | 12/26/70 | PAGE | 1 |
|---|------|-------------------------------|--------------------------|--------------------------|--------------------------|
| FFFF 1055 9F47 4000 0000 0000 0000 0000 | DATA | 1000 0000 0000 1000 0004 8000 | 1000 8000 5000 0000 5000 | 1000 8000 5000 0000 5000 | 1000 8000 5000 0000 5000 |
| FFFF 1065 86A8 0020 0000 0020 0000 0000 | DATA | 1000 0000 0000 1000 0000 0000 | 1000 0000 0000 0000 0000 | 1000 0000 0000 0000 0000 | 1000 0000 0000 0000 0000 |
| FFFF 1075 2705 8000 0000 0010 0000 0000 | DATA | 1000 0000 0000 1000 0000 0000 | 1000 0000 0000 0000 0000 | 1000 0000 0000 0000 0000 | 1000 0000 0000 0000 0000 |
| FFFF 1085 0040 0014 0011 0010 0020 0000 | DATA | 1000 0000 0000 1000 0000 0000 | 1000 0000 0000 0000 0000 | 1000 0000 0000 0000 0000 | 1000 0000 0000 0000 0000 |
| FFFF 1095 8C07 0344 037F 03E8 0410 0438 | DATA | 1000 0000 0000 1000 0000 0000 | 1000 0000 0000 0000 0000 | 1000 0000 0000 0000 0000 | 1000 0000 0000 0000 0000 |

256
 1792
 1536

LUPI.SV
LOADED BY RLOH REV 05.01 AT 15:49:24 12/26/10

-MAIL- TMIN

| | | | | | | | | | |
|-------|--------|-------|--------|------|--------|-----|--------|-----|--------|
| NMAX | 010421 | ZMAX | 000050 | CSZE | 000000 | ESI | 000000 | SSI | 000000 |
| USTAD | 000400 | ZLS.P | 010240 | TMIN | 010525 | | | | |

[illegible]

```

PRINT EL21.JOB
RLOK/Z 10420/H EL21 X/L2MAP/U X
MKANS/Z 10420/H 10502/1 EL21.SV EL21.AB
RLOK/H EL21.AB

```

EL21.SV LOADED BY RLDR REV 05.01 AT 15:52:54 12/28/76

MAIN TMIN

```

NMAX 010600 ZMAX 000050 CSZE 000000 EST 000000 SSI 000000
USFAD 000400 EL21 010420 TMIN 010504

```

15:55:17 12/28/76 PAGE 1

| EL21.AB | ADDR | DATA |
|-----------|------|---|
| FFFF 1110 | E6C0 | 1000 2008 0001 13FF 0000 6025 2000 0000 0000 0000 0000 2008 0002 15FF 0000 |
| FFFF 1120 | 7A12 | 7052 2000 0000 0000 0000 0000 0000 0000 0000 0000 0000 507E 2000 0000 0000 |
| FFFF 1150 | F65E | 0000 2000 2002 0004 25FF 0000 2075 1000 0000 0000 0000 0000 0000 2004 0000 25FF |
| FFFF 1140 | 9904 | 0000 2000 2000 0000 0000 0000 0000 0000 0000 0000 0000 55FF 0000 2004 0000 0000 |
| FFFF 1150 | DA6F | 0000 2000 2000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 |
| FFFF 1160 | 968F | 0000 2000 2000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 |
| FFFF 1170 | EE95 | 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 |

PRIME LUGGERS

21 03 / 1054/14 11171 X/L;MAP/U X

AV-1987-AS-1190741/55501 4/82511 / 3.11.2011

RECEIVED 1967-11-15

144-151-517

NY 11101

2571111 2571111

| | | |
|----|----------|----------|
| 0 | 00000000 | 00000000 |
| 1 | 00000000 | 00000000 |
| 2 | 00000000 | 00000000 |
| 3 | 00000000 | 00000000 |
| 4 | 00000000 | 00000000 |
| 5 | 00000000 | 00000000 |
| 6 | 00000000 | 00000000 |
| 7 | 00000000 | 00000000 |
| 8 | 00000000 | 00000000 |
| 9 | 00000000 | 00000000 |
| 10 | 00000000 | 00000000 |
| 11 | 00000000 | 00000000 |
| 12 | 00000000 | 00000000 |
| 13 | 00000000 | 00000000 |
| 14 | 00000000 | 00000000 |
| 15 | 00000000 | 00000000 |
| 16 | 00000000 | 00000000 |
| 17 | 00000000 | 00000000 |
| 18 | 00000000 | 00000000 |
| 19 | 00000000 | 00000000 |
| 20 | 00000000 | 00000000 |
| 21 | 00000000 | 00000000 |
| 22 | 00000000 | 00000000 |
| 23 | 00000000 | 00000000 |
| 24 | 00000000 | 00000000 |
| 25 | 00000000 | 00000000 |
| 26 | 00000000 | 00000000 |
| 27 | 00000000 | 00000000 |
| 28 | 00000000 | 00000000 |
| 29 | 00000000 | 00000000 |
| 30 | 00000000 | 00000000 |
| 31 | 00000000 | 00000000 |
| 32 | 00000000 | 00000000 |
| 33 | 00000000 | 00000000 |
| 34 | 00000000 | 00000000 |
| 35 | 00000000 | 00000000 |
| 36 | 00000000 | 00000000 |
| 37 | 00000000 | 00000000 |
| 38 | 00000000 | 00000000 |
| 39 | 00000000 | 00000000 |
| 40 | 00000000 | 00000000 |
| 41 | 00000000 | 00000000 |
| 42 | 00000000 | 00000000 |
| 43 | 00000000 | 00000000 |
| 44 | 00000000 | 00000000 |
| 45 | 00000000 | 00000000 |
| 46 | 00000000 | 00000000 |
| 47 | 00000000 | 00000000 |
| 48 | 00000000 | 00000000 |
| 49 | 00000000 | 00000000 |
| 50 | 00000000 | 00000000 |
| 51 | 00000000 | 00000000 |
| 52 | 00000000 | 00000000 |
| 53 | 00000000 | 00000000 |
| 54 | 00000000 | 00000000 |
| 55 | 00000000 | 00000000 |
| 56 | 00000000 | 00000000 |
| 57 | 00000000 | 00000000 |
| 58 | 00000000 | 00000000 |
| 59 | 00000000 | 00000000 |
| 60 | 00000000 | 00000000 |
| 61 | 00000000 | 00000000 |
| 62 | 00000000 | 00000000 |
| 63 | 00000000 | 00000000 |
| 64 | 00000000 | 00000000 |
| 65 | 00000000 | 00000000 |
| 66 | 00000000 | 00000000 |
| 67 | 00000000 | 00000000 |
| 68 | 00000000 | 00000000 |
| 69 | 00000000 | 00000000 |
| 70 | 00000000 | 00000000 |
| 71 | 00000000 | 00000000 |
| 72 | 00000000 | 00000000 |
| 73 | 00000000 | 00000000 |
| 74 | 00000000 | 00000000 |
| 75 | 00000000 | 00000000 |
| 76 | 00000000 | 00000000 |
| 77 | 00000000 | 00000000 |
| 78 | 00000000 | 00000000 |
| 79 | 00000000 | 00000000 |
| 80 | 00000000 | 00000000 |
| 81 | 00000000 | 00000000 |
| 82 | 00000000 | 00000000 |
| 83 | 00000000 | 00000000 |
| 84 | 00000000 | 00000000 |
| 85 | 00000000 | 00000000 |
| 86 | 00000000 | 00000000 |
| 87 | 00000000 | 00000000 |
| 88 | 00000000 | 00000000 |
| 89 | 00000000 | 00000000 |
| 90 | 00000000 | 00000000 |
| 91 | 00000000 | 00000000 |
| 92 | 00000000 | 00000000 |
| 93 | 00000000 | 00000000 |
| 94 | 00000000 | 00000000 |
| 95 | 00 | |

62-10357-151

1
2
3
4
5
6
7
8

2000

11411-AB

DATA →

WSM 2004
KSM 2004

1002 CSM. km

22

3

kw

22

34

22

22

33

73

MACRO'S AND INSTRUCTIONS:

The MACRO's and instructions for their usage are attached. These MACRO's apply to the generation of emitter track files, EL2 data files, EL1 tables, or library linkage tables.

EXAMPLE: USER WISHES TO GENERATE TEST DATA AND IS CONCERNED ONLY WITH WORDS 0 AND 7; HE CODES AS FOLLOWS:

| USER'S CODE | COMMENTARY |
|-----------------|---|
| .RDX 10 | SETS INPUT RADIX TO DECIMAL |
| EIF | INITIALIZATION |
| EFWD 0 0 1 3125 | WORD 0: ETH = 0, ELP = 1, EAPI = 3125 |
| EFWD 7 15 938 | WORD 7: ESTY = 15, ESPD = 938 |
| EFEND | OUTPUTS ALL 16 EIF WORDS, DISPLAYING ONLY THOSE NOT = 0 |

NOTES : EACH FILE GENERATED MUST START WITH AN 'EIF' AND END WITH AN 'EFEND'. THE ORDER OF THE 'EFWD'S IN BETWEEN IS IMMATERIAL.

THE I-TH WORD (I = 0,1, ... ,15) IS GENERATED BY WRITING

EFWD I F1 F2 ... FN

WHERE THE F'S ARE THE FIELDS REQUIRED FOR THE I-TH WORD UNDER THE FOLLOWING RULES:

- I MUST BE A DECIMAL INTEGER 0-15 WITHOUT DECIMAL POINT NO MATTER WHAT INPUT RADIX IS FOR #'S AMONGST THE F'S. I MUST BE SEPARATED FROM 'WORD' BY A SINGLE SPACE, TAB OR COMMA.
- THE F'S MAY BE EXPRESSIONS AND MUST BE SEPARATED BY SPACE(S), TAB(S) OR COMMA(S).
- THE FIELDS ARE PRESENTED IN LEFT-TO-RIGHT ORDER, AND EACH FIELD FOR A GIVEN WORD MUST BE GIVEN EXPLICITLY.
- EXTRA FIELDS ARE IGNORED AND A FIELD VALUE TOO LARGE FOR THE ALLOTTED NUMBER OF BITS IS TRUNCATED WITHOUT DIAGNOSTIC.

AS IMPLIED BY THE EXAMPLE, THE RADIX FOR INTERPRETING NUMERIC LITERALS IS UNDER THE USER'S CONTROL. THE OUTPUT RADIX IS ALWAYS HEXADECIMAL.

ERRORS : 1. ";***** ERROR: WORD # NOT IN RANGE 0-15 *****"
";***** ERROR: EFWD MACRO WITHOUT ARGUMENTS *****"

HAS NO EFFECT ON CURRENT FILE.

2. ";***** ERROR: TOO FEW ARGUMENTS FOR WORD '1' *****"
'1' IS REPLACED BY ACTUAL 1-ST ARGUMENT TO WORD MACRO.
THE I-TH WORD WILL HAVE THE VALUE 0.

3. USER SHOULD AVOID USING FOLLOWING SET OF NAMES. TO DO SO CAN CAUSE ERRORS WHICH THE MACRO ASSEMBLER MAY OR MAY NOT FLAG.

| | | | | | | |
|-------|-----------|-------|-------|-----|----|----|
| CLEAR | ERROR | SHOW | EFDAI | ERR | ?1 | ?J |
| WD.0 | ... WD.15 | VERIF | GENR6 | | | |

```
.MACRO EIF
**.NOMAC 1
CLEAR 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
%
```

```
.MACRO CLEAR
**.NOMAC 1
?I=1
.DU .ARGC1
WD.1?I=0
?I=?I+1
.ENDC
%
```

```
.MACRO ERROR
**.NOMAC 0
**.PUSH .NUCON
**.NUCON 1
**.IFE T1-1
;***** ERROR: WORD # NOT IN RANGE T2 *****
**.ENDC
**.IFE T1-2
;***** ERROR: TOO FEW ARGUMENTS FOR WORD T2 *****
**.ENDC
**.IFE T1-3
;***** ERROR: T2 MACRO WITHOUT ARGUMENTS *****
**.ENDC
**.NOMAC 1
ERR=1
.NUCON .POP
%
```

```
.MACRO EFEND
**.NOMAC 1
.PUSH .RDXU
.RDXU 16
SHOW 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
.RDXU .POP
%
```

```
.MACRO SHOW
**.NOMAC 0
**.PUSH .NUCON
**.NUCON 1
**?I=1
**.DU .ARGC1
**.IFE WD.1?I
**0
**.ENDC
**.IFN WD.1?I
WD.1?I
**.ENDC
**?I=?I+1
**.ENDC
**.NOMAC 1
.NUCON .POP
%
```

```
.MACRO EFWD
**.NOMAC 1
ERR=0
```

```
.IFE .ARGC1
ERRUR 3 EFWD
.ENDC
```

```
.IFE ERR
  .IFN T1>15.
    ERRUR 1 0-15
  .ENDC
.ENDC
```

```
.IFE ERR
.PUSH .ARGC1
VERIFY THAT .ARGC1 >= 2 WHEN T1 = 4
.IFE ERR
VERIFY THAT .ARGC1 >= 3 WHEN T1 = 1,,8,,9,,11,,12,,13,,14.
.IFE ERR
VERIFY THAT .ARGC1 >= 4 WHEN T1 = 0,6
.IFE ERR
VERIFY THAT .ARGC1 >= 5 WHEN T1 = 2,5
.IFE ERR
VERIFY THAT .ARGC1 >= 6 WHEN T1 = 5
.IFE ERR
VERIFY THAT .ARGC1 >= 8. WHEN T1 = 15.
.IFE ERR
VERIFY THAT .ARGC1 >= 10. WHEN T1 = 10.
.ENDC
.ENDC
.ENDC
.ENDC
.ENDC
.ENDC
ENDC
?I=.POP
.ENDC
```

```
.IFE ERR
  .IFE T1-10.
    ?I=10
    WD.10=((T9&15.JB(11.))!(T?1&15.))
  .ENDC
GENEF T1 T2 T3 T4 T5 T6 T7 T8
.ENDC
%
```

```
.MACRO VERIFY
**.NOMAC 1
?I=.ARGC1-1
?J=8
.DO ?I*(1-ERR)
  .IFE T6-T?J
    .IFE .10PT3T4
    ERRUR 2 T6
  .ENDC
.ENDC
?J=?J+1
.ENDC
%
```


.MACRO GENET

** .NUMAC 1

.IFE T1*(T1-6)

WD.T1=((T2&1)B(0))!((T3&1)B(1))!((T4&16585.)

.ENDC

.IFE (T1-1)*(T1-8.)*(T1-9.)*(T1-11.)*(T1-12.)*(T1-13.)*(T1-14.)

WD.T1=((T2&255.)B(7))!((T3&255.)

.ENDC

.IFE (T1-2)*(T1-3)

WD.T1=QQQQ(T2,T3,T4,T5)

.ENDC

.IFE T1-4

WD.4=T2&65555.

.ENDC

.IFE T1-5

WD.5=((T2&15.)B(3))!((T3&15.)B(7))!((T4&31.)B(12.))!((T5&1)B(14.))!((T6&1)

.ENDC

.IFE T1-7

WD.7=W4A(T2,T3)

.ENDC

.IFE T1-10.

?I=2

?J=0

.DO /

WD.10=WD.10!((T?I&1)B(?J))

?I=?I+1

?J=?J+1

.ENDC

.ENDC

.IFE T1-15.

WD.15=((T2&1)B(0))!((T3&1)B(1))!((T4&1)B(2))!((T5&1)B(3))!((T7&1)B(11.))

WD.15=WD.15!((T6&15.)B(7))!((T8&15.)

.ENDC

%

.MACRO QQQQ

((T1&15.)B(3))!((T2&15.)B(7))!((T3&15.)B(11.))!((T4&15.)%

.MACRO W4A

((T1&15.)B(3))!((T2&1023.)%

```

;   MACROS FOR GENERATING EMITTER LIBRARY 2 DATA
;
;   ALL CONVENTIONS ARE THE SAME AS FOR THE EIF-GENERATION MACROS
;
;   EXCEPT THE NAMES:
;
;       EL2
;       E2WD 8 13 14 15 9
;       E2WD 9 0 2 3 12
;       E2END
;
;       . . . ETC.
;
.MACRO EL2
**.NUMAC 1
CLEAR 0 1 2 3 4 5 6 7 8 9 10
%

.MACRO E2END
**.NUMAC 1
.PUSH .RDXU
.RDXU 16
SHOW 0 1 2 3 4 5 6 7 8 9 10
.RDXU .POP
%

.MACRO E2WD
**.NUMAC 1
ERR=0

.IFE .ARGCT
ERROR 3 E2WD
.ENDC

.IFE ERR
.IFN T1>10.
ERROR 1 0-10
.ENDC
.ENDC

.IFE ERR
.PUSH .ARGCT
VERIFY THAT .ARGCT >= 2 WHEN T1 = 4
.IFE ERR
VERIFY THAT .ARGCT >= 3 WHEN T1 = 0,3,7
.IFE ERR
VERIFY THAT .ARGCT >= 4 WHEN T1 = 1,5,6
.IFE ERR
VERIFY THAT .ARGCT >= 5 WHEN T1 = 2,8,9,10
.ENDC
.ENDC
.ENDC
?1=.POP
.ENDC

.IFE ERR
GENE2 T1 T2 T3 T4 T5
.ENDC
%

```

.MACRO GENE2

** .NUMAC 1

.IFE T1

WD.0=((T2&15.)B(3))!((T3&4095.)

.ENDC

.IFE T1-1

WD.1=((T2&7.)B(2))!((T3&31.)B(7))!((T4&255.)

.ENDC

.IFE T1-2

WD.2=((T2&1.)B(0))!((T3&1.)B(1))!((T4&15.)B(7))!((T5&255.)

.ENDC

.IFE T1-3

WD.3=W4A[T2,T3]

.ENDC

.IFE T1-4

WD.4=W4A[0,T2]

.ENDC

.IFE (T1-5)*(T1-6)

WD.11=QWB[T2,T3,T4]

.ENDC

.IFE T1-7

WD.7=QWB[0,T2,T3]

.ENDC

.IFG T1-7

WD.11=QWB[T2,T3,T4,T5]

.ENDC

%

.MACRO QWB

((T1&15.)B(3))!((T2&15.)B(7))!((T3&255.)%

MACROS FOR GENERATING EMITTER LIBRARY 1 DATA

RULES: EACH OF THE FOUR TYPES OF EL1 PARTS (F,PI,PW,GT) MAY BE GENERATED IN A .DO-LOOP AS FOLLOWS:

| | |
|-------------------|-----------------------------------|
| USER'S CODE | C O M M E N T A R Y |
| ?K=1 | INDEX USED INSIDE MACROS |
| .DO N | N = 3 FOR F & PI; = 2 FOR PW & GT |
| TYPE XX | XX = LITERALLY F, PI, PW OR GT |
| <RECORD> | SYNTACTIC EXPANSION BELOW |
| <RECORD> | . |
| ... | . |
| <RECORD> | . |
| ?K=?K+1 (?K=4) | ADVANCE INDEX (FOR TYPE GT ONLY) |
| .ENDC | END OF .DO-LOOP |

RECORD: EACH RECORD PERTAINS TO A RANGE OF THE PARAMETER NOMINATED IN THE 'TYPE' MACRO. LET THE FOLLOWING BE SEVERAL SUCH RANGES.

| NO. | LOW | TO | HIGH | T R U N K | L I S T |
|-----|-----|----|------|----------------|-------------------|
| 18 | 342 | 10 | 619 | 15 16 17 | 21 31 35 43 44 45 |
| 19 | 620 | 10 | 734 | | |
| 20 | 735 | 10 | 751 | 13 14 15 16 17 | 21 31 35 43 44 45 |
| 21 | 752 | 10 | 799 | 15 16 17 | 21 31 35 43 44 45 |

THE CORRESPONDING RECORDS ARE ENCODED:

```

ZONE 18 342
LIST 15 16 17 21 31 35 43 44 45
ZEND 18

ZONE 19 620
ZEND 19                (NO LIST ==> EMPTY)

ZONE 20 735
LIST 13 14 15 16 17 21 31 35 43 44 45
ZEND 20

ZONE 21 752
DUPL 18                (LIST IS DUPLICATE OF ZONE 18'S)
ZEND 21
  
```

NOTES: A LONG LIST MAY BE BROKEN UP INTO SEVERAL LINES EACH STARTING WITH CALL ON MACRO 'LIST'.

RESULTS: ON 1-ST PASS THRU LOOP, GENERATES ZLS.XX (ALL XX)
 2-ND ODA.XX (XX = NE, GT)
 3-RD ODV.XX (XX = F OR PI)
 4-TH ODA.GT

THE SECOND ARGUMENT OF 'ZONE' MAY BE DELETED FOR XX = PW & GT

S.J.WERSAN

1976 DEC 9

```
.MACRO TYPE
**.NUMAC 0
**.NOCUN 1
```

```
**.IFE ?K-1
ZLS.T1:          ;**** KWC/BV ZONE LISTS ****
**.BASE=.
**.KW=0
**.CLEAR 0 1 2 3 4 5 6 7 8 9
**.ENDC
```

```
**.IFE (?K-2)
ODA.T1:          ;**** OUTER-DIRECTORY ADDRESSES ****
**.ENDC
```

```
**.IFE ?K-3
ODV.T1: ZCI      ;**** OUTER-DIRECTORY VALUES ****
**.ENDC
```

```
**.IFE ?K-4
ODA.T1: ZCI      ;**** OUTER-DIRECTORY ADDRESSES ****
**.ENDC
```

```
**.NOMAC 1
ZCT=0
EMPTY=-1
%
```

```
.MACRO ZONE
**.NUMAC 1
ZCI=ZCI+1
```

```
.IFE ?K-1
ZN.T1=.
FL\ZCI=0
.ENDC
```

```
.IFE ?K-3
**.NOMAC 0
      T2
**.NUMAC 1
.ENDC
```

```
%
```

```
.MACRO LIST  
** .NUMAC 1
```

```
?I=1  
.DO .ARGC1*(?K==1)  
TRUNK=?I-1  
WORD=TRUNK/16.  
BIT=(1)B(TRUNK-(16.*WORD))  
KW=KW!((1)B(WORD))  
SET 0 1 2 3 4 5 6 7 8 9  
?I=?I+1  
.ENDC
```

%

```
.MACRO SET  
** .NUMAC 1
```

```
?J=1  
.DO 10.  
  .IFE WORD-?J  
  WD.?J=WD.?J!BIT  
  .ENDC  
?J=?J+1  
.ENDC
```

%

```
.MACRO DUPL  
** .NUMAC 1
```

```
.IFE ?K-1  
FLVZCT=2  
.ENDC
```

```
.IFE ?K-2  
DISPL=ZN.11-BASE  
.ENDC
```

```
.IFE ?K-4  
DISPL=11  
.ENDC
```

```
%
```

```
.MACRO NUL.0  
** .NUMAC 0  
KW
```

```
** .NUMAC 1  
KW=0  
?I=1  
.DO 10.
```

```
.IFN WD.1?1  
** .NUMAC 0  
WD.1?1  
** .NUMAC 1  
WD.1?1=0  
.ENDC
```

```
?1=?1+1  
.ENDC  
%
```

.MACRO ZEND

** .NUMAC 1

.IFE ?K-1

.IFN KW

FLVZCI=1

NOI.0 0 1 2 3 4 5 6 7 8 9

.ENDC

.ENDC

.IFE ?K-2

.IFE FLVZCI

** .NUMAC 0

EMPTY

** .NUMAC 1

.ENDC

.IFE FLVZCI-1

DISPL=ZN.T1-BASE

.ENDC

.IFN FLVZCI

** .NUMAC 0

DISPL

** .NUMAC 1

.ENDC

.ENDC

.IFE ?K-4

.IFE FLVZCI-1

DISPL=2*(ZN.T1-BASE)

.ENDC

.IFE FLVZCI-2

DISPL=2*(DISPL-T1-1)

.ENDC

.IFN FLVZCI

** .NUMAC 0

DISPL

** .NUMAC 1

.ENDC

.ENDC

%

.END